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Original Contributions.

SELF-CULTURE ESSENTIAL TO THE UPLIFTING OF THE PROFESSION.

BY J. A. CHAPPLE, D.D.S., ATLANTA. READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, AT LOUISVILLE, MAY 17-19, 1904.

It is not our purpose to advocate the disenthronement of gold or the debasement of porcelain; to argue the etiology of pyorrhea or the possible pathological effect of saliva; nor shall we be drawn into the seductive vortex of dental education, with its four-year course amendment. These are problems as yet in embryo, and we are quite content to leave them to that infallible prognostician, time, for their ultimate solution. Rather would we draw away from those things which characterize us as mere artisans in the public eye, and endeavor to analyze the reasons for this attitude of the public towards us as a profession.

To "know thyself" is as imperative to-day as when Plato first inscribed it over his door-way. To know thyself calls for the "taking of stock," to determine your debtor or creditor relationship to the commercial world; it demands that you shall take your latitude and longitude, the better to mark your true position on the broad expanse of old ocean's bosom.

If in the taking of stock the debit column exceeds the credit column the wise man sets about at once to readjust himself; if the mariner discovers that he is out of his course he loses no time in verifying his compass and turning his wheel accordingly. If we would profit by the example of the business man and the sailor, in our effort to know ourselves, we will find much to censure and regret; but if we are wise we will not be slow to throw off those impedimenta to our upward progress (in its highest and best sense) and blaze out a new pathway, through which all true men must

come who wish to place their profession upon a basis co-equal with all professions.

We have patted ourselves upon the back and fairly filled the air with "Eurekas" as a result of our achievements, until we are almost drunk with self-adulation. We have accomplished much and justly earned our right to a place in the healing art, which was courteously acknowledged recently at New Orleans, but *have we wholly dissipated our traditional origin from the minds of the masses?* We think not, and the reason is to be found in two or three propositions. Hitherto the literary qualification of those seeking entrance into dentistry has not been emphasized as it is to-day, hence the natural trend of the practitioner has been towards the pursuit and development of the mechanical features of the art, minus the effort for self-culture in those intellectual graces which always compel recognition and which constitute the crowning glory of any pursuit. That we have been criminally derelict in this respect should occasion no surprise, since our own literature has failed to receive that moral and material support it so richly deserves. This lamentable lack of esthetic culture, even among those of recognized practical ability, is quite manifest to the least cultured of our own clientele, who are unable to reconcile our claims for any extraordinary strides in professional development.

The status of the legal profession is not due alone to the ability of its members to plead law successfully before courts and juries, but because of the liberal education and broad culture of its advocates, who draw their inspiration from every avenue of learning. Not only in their own literature have they shown unusual gifts in authorship, but they have left their impress upon almost every intricate problem in science and art, and have literally reveled in fiction. Will it be denied that the legal profession was elevated in public esteem when one of its devotees gave to the world that delightful romance—"When Knighthood Was in Flower?" Who now remembers Richard Henry Wielde as the brilliant congressman and attorney-general? This service to his country has long been forgotten, and in the popular mind eclipsed by the chaste beauty and even artless simplicity of his lines—

"My life is like the Summer Rose
That opens to the morning sky."

Nor can it be affirmed that the status of the medical profession has been attained through the medium of materia medica and surgery alone. While the M. D. has ever been a conspicuous figure in politics, and has thereby brought to himself and his profession some little prestige, yet his most potent influence is seen and felt in the material upbuilding of the community in which he lives. He is keenly alive to his environment, and inspires counsel and mutual confidence. Loyalty to his citizenship is not his only virtue. He too, like the disciple of Blackstone, has delved into literature, and Conan Doyle and Weir Mitchell are the just pride of the profession to-day.

In the marts of trade and finance its representatives are not wholly content with the expansion of their trade limits or the accumulation of accrued interest, nor are they willing to move in a circumscribed environment. The metropolitan merchant-prince and Wall street manipulator of his or other people's millions in the midst of most laborious work find time to discuss through the medium of current literature great problems of public policy and economic questions. In the church, politics, philanthropy and literature he has exercised an influence for good and thereby dignified himself and his calling. Who now associates the name of John Hancock with that of merchant and of large shipping interests? To the casual reader of history he is better known as standing in the circle of colonists, protesting against the wrong of "taxation without representation," and his autograph in the Declaration of Independence from the boldness of its lines is a fitting index to his character. Yet while engaged in this patriotic service his mercantile affairs were not despised nor neglected.

While these examples could be multiplied, it is amply sufficient to know that the lawyer, the physician and the merchant are broad enough to look above and beyond their own horizon into the affairs and well-being of their fellow men.

The logical deduction of our argument naturally points to a larger conception of life on the part of the dentist, whereby he may contribute his share to a more elevated tone and vitalizing force to dentistry and thereby shape its life and destiny co-equal with that of all liberal professions. To discuss in detail on every occasion with your chance acquaintance the day's work in your office neither

interests nor instructs him, and you have but confirmed his hitherto vague suspicion regarding the status of *every* dentist as that of an artisan pure and simple.

To single out, here and there, isolated exceptions in our own profession does not refute the painful truth of this widespread suspicion, nor can we hope to lessen its force in our day, but we appeal to those who are to follow in our wake, and charge them with the task of throwing off this yoke and striving for higher ideals.

Perhaps it will be urged that a requisite of success in these strenuous times is concentration of thought and energy in one direction. We fully appreciate the force of the suggestion, but reply that the strong man may be graceful; the athlete in the Olympian games was the only fit model for the sculptor's chisel. The man of force and influence achieves distinction as much by his broader culture as by his skill in technology—why, then, think you that personality should be submerged in the toil and business of our vocation? *At all times and everywhere* the graces, the courtesy, the culture—in short, that fine feeling which is so hard to define but so easy to discover—are all forces that distinguish the one in the multitude.

In Elihu Burritt did the people see the blacksmith or the self-cultured linguist, the master of a score of languages? The marvelous mental achievements of this man, attained under such adverse circumstances, challenged the admiration of the world, and Burritt at the forge was lost in the remarkable personality of Burritt the linguist.

But, you say—"While this arraignment of the profession is justified by the facts, what have you to offer as a remedy?" In a word—emulate the example of the lawyer, the physician and the merchant. Come out of your hermitage; get away from the atmosphere of your office; forget how many crowns and bridges you have made or are in prospect. Take an interest in your neighbor and your community's welfare. Have you a library in your town? If not, agitate the building of one; talk it on the streets and through the press. Get together, and in the organization, by reason of your initiative in the matter, you will naturally become a director of its affairs. Is your present city government apathetic to general improvement and offering no encouragement to those who would enlarge its sphere of commercial and educational usefulness? Throw

yourself into the breach and arouse public sentiment on the question. Is there a church, college, school-house, orphanage or hospital to be erected in your town? Beg the privilege of subscribing to the fund, irrespective of the organization under whose auspices it is builded. Is there a bitter political warfare being waged between your fellow citizens, wherein no great moral question is involved? Keep out of it!

What are you reading in the way of dental literature? Are you depending upon the Monthly Jaw-Bone, The Golden Crown, and "Sample Copies," or getting your inspiration from recognized standards? You will never get the exact figures from the publishers, but enough is known to warrant the assertion, that compared with the literature of other closely allied professions, our best current literature is not sustained as it should be. But what about your miscellaneous reading? Ah, herein lies the dentist's most vulnerable point of attack. After he has perused his weekly town paper, noting the births, deaths, marriages and sheriff's sales, with an occasional glance at the Congressional Record, the gray matter becomes surfeited, the wheels refuse to run any longer, and we have a typical case of innocuous desuetude, living and dying in ignorance of the fact that there is anything in even classical literature a knowledge of which would make him a better dentist.

The lawyer, the better to fortify himself in a suit for damages for physical injuries sustained by his client, must needs learn something of medical jurisprudence. So, too, it is the high privilege of the dentist, the ambitious dentist who strives for lofty ideals, to go outside of his text-books and find a most helpful adjunct to his daily work by familiarizing himself with the rudimentary principles of art—that phase of art as we see it illustrated upon the canvas, in sculpture, in ceramics and in architecture. Most assuredly a knowledge of the proper blending of colors would prove of immense value to those who would excel in porcelain work and certain features of dental prosthesis. As for architecture, many of its cardinal principles confront us almost daily, and while we may be conversant with their application and usage we are comparatively ignorant of the true scientific basis upon which they are founded.

We have thus briefly indicated a course of procedure which if pursued will surely exonerate us from the charge of our artisanship and place us in our just relation to society, and in our claim for self-

culture as essential to the dignifying of the profession we are abundantly sustained in the curricula of the technological schools of the country. In the making of an electrical or industrial engineer, down to a simple wood-carver or textile-weaver, a classical education goes hand in hand with a practical education, and we have as a result an ideal product. Moreover, in the sanguinary business of educating men in the science of war—a science which teaches them how best to defend themselves and to destroy their enemy—a classical equipment is deemed necessary for such a career. Finally, in this struggle for higher excellence think not that this culture is genius, this adornment a gift, for

"The heights of great men reached and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night."

Discussion. *Dr. H. B. Tileston,* Louisville:—My first and quite natural impulse upon reading Dr. Chapple's very excellent paper was to pat him on the back and exclaim, "That's all right, old fellow, I agree with you perfectly." That, however, would not be what is expected of one appointed to discuss a paper, nor would it particularly please the author, I am sure. One does not grind out mental products to be presented to bodies of intelligent men with the expectation or desire that they should be received with flattering approbation as though they were hackneyed saws that everybody knew before. But it is not with any idea of flattery that I undertake to discuss Dr. Chapple's paper, nor simply to please him by combating some of his statements, but because while there is much, very much, in his paper with which all must agree, there are in it some statements and conclusions with which I intend to take issue.

The caption of his paper announces a truth which may be accepted as an axiom—that self-culture is essential to the uplifting of the profession, but when he states that the dental profession, or more properly speaking, the dentist, has utterly failed to dissipate his traditional origin, assuming that such origin is a degraded and degrading one, he makes a proposition which is neither sustained by his subsequent argument nor by the evidence presented by observa-

tion of the particular genus under discussion, the dentist himself.

He compares the status of the dentist with that of the lawyer and the physician, and accords to the latter professions a higher place because, forsooth, a lawyer has written a delightful romance or a beautiful poem, and a physician has become better known as a novelist and the creator of Sherlock Holmes than as a physician. Is it not true that our own Ottolengui is entitled to as high a place in the hall of fame for having written "An Artist in Crime" as Conan Doyle? Westcott, the author of "David Harum," as delightful a romance in its way as "When Knighthood Was in Flower," was a dentist. Can we pass lightly over the achievements of W. D. Miller, who has given to the world one of the most positively demonstrated truths in pathology? Norman W. Kingsley is an artist, and his pictures and portraits in burnt wood are unexcelled if equaled by any. G. V. Black is a scientist whose accomplishments in various lines of effort will ever stand as an imperishable monument to his ability. Dr. Evans of Paris achieved world-wide fame for an act of bravery and chivalry. Hundreds of dentists are producers of literature, much of it of enduring merit, although the subject of it may be dentistry, and there are artists and musicians among them in as large proportion as in any other profession.

Have you never heard of a blackleg lawyer—a shyster, or of a charlatan who was a doctor? Is there any reason why the banner of dentistry should be dragged in the dust because a majority of those who practice it are not writers or artists, or are even lacking "in those intellectual graces * * * which constitute the crowning glory of any pursuit," while those of medicine and the law, which professions are graced or disgraced by as many unworthies in proportion as is dentistry, are raised on high amid unqualified adulations because there are some, though in no greater proportion than in dentistry, who have been the authors of fiction and poetry of more or less merit?

Dr. Chapple warns us that to "single out here and there isolated exceptions in our own profession does not refute the painful truth," yet he pursues this very course in his effort to prove the superiority of other professions and callings. Has the fact that Elihu Burritt, the blacksmith, became a famous linguist resulted in the acceptance into polite and refined society of all blacksmiths? But all black-

smiths may well feel proud that Elihu Burritt was one of their calling, and be more contented in their sphere of usefulness because of his fame. And all dentists may well take pride in the achievements of those of their number who have stood out as shining lights and who have contributed much to the knowledge and culture of the human race.

Dentistry as a profession is still young, and while much has been accomplished in its advancement to the high plane of a liberal and dignified calling, much more remains to be achieved, and Dr. Chapple is correct when he lays it as a charge upon each one to contribute to the uplifting of his profession by cultivating in himself those graces, intellectual and social, which alone tend to make him an honored and respected citizen.

PRESSURE FOR PORCELAIN CROWNS.

BY ROBIN ADAIR, D.D.S., M.D., ATLANTA, GA.

I hope that the description of this crown is not "new," for it generally means trouble when one claims originality, but if anyone

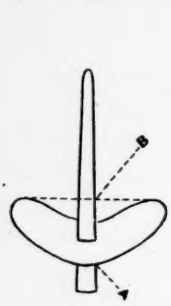


Fig. 1

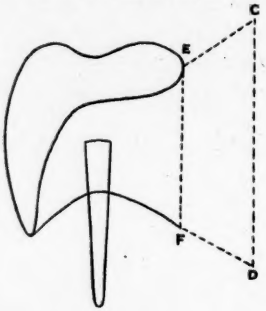


Fig. 2

has been using this method I should feel like "cussing him out" for not letting me know of its benefits, as I have made numerous pilgrimages to prominent porcelain workers without being satisfied as to porcelain crowns. Heretofore I used the Turner method or employed the Davis crowns, but there was always an element of weakness, as it was difficult to pack the body about the pin, and then I never could get the hole in the crown and the dowel pin to come together properly.

It was my pleasure recently to be walking through a teeth factory in company with the genial manager, who was explaining things to me, and when at the "press" he made this remark—"If you dentists could only get pressure on your porcelain body how much

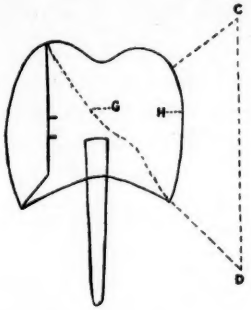


Fig. 3

better you would succeed." Another point that struck me with much force was that the tooth body was mixed with paste.

To my friend, Dr. Joseph Head, I wish to give credit for my "press idea." He makes his crowns somewhat on this line, but does not get pressure on the pin.

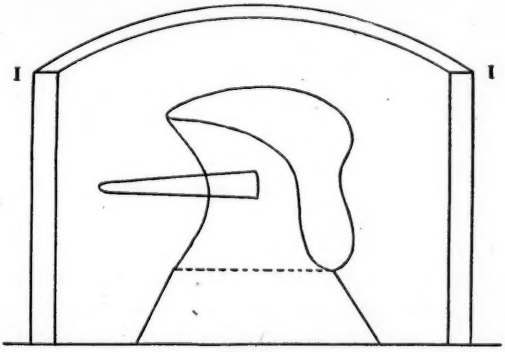


Fig. 4

I make my dowel cap saddle-shaped without band, believing that it has the same strength as a band the width a, b, Fig. I. Roots do not split prepared in this way, and as there are absolutely no overhanging edges nor irritating points I believe it an advantage over

the band, no matter how well the latter is fitted. Place dowel and cap in position on tooth root and take a modeling compound bite. The dowel should come out in the bite. Place a little wax about the dowel pin, so that it can be removed from the plaster model, which is next poured, and the whole placed on a crown articulator. In most

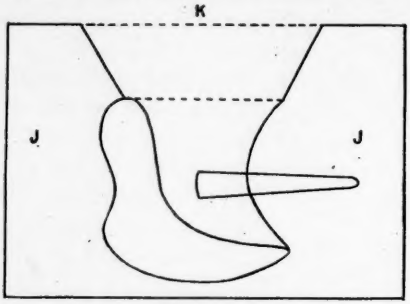


Fig. 5

cases this is unnecessary, as the work takes little time and can be fitted in the mouth, thus assuring the proper alignment, color and contour. The mouldine will hold together well enough for this.

To me it is foolish to attempt to make a match for the natural teeth in color and shape when there is a vast stock at my command

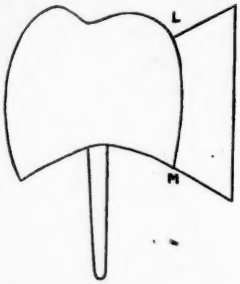


Fig. 6

far better than any man can bake, so always use a manufactured tooth, either facing, plain rubber, or saddle back for the front. If a saddle back is used, grind out so as to allow space for the dowel pin, paying no attention to the tooth pins.

When tooth is adjusted build in space where you want your por-

celain with mouldine or similar compound. If anterior crown, build out as line g, Fig. III. If facing is used instead of saddle back for a bicuspid crown, build out with mouldine as line h. After fitting crown build out an excess as line c, d, Figs. II and III. The mouldine foot is now placed downward, as in Fig. IV, and a rubber ring (i, i) is placed around the crown. Fusible metal is next poured in ring.

In Fig. V is shown the fusible metal, j, j, in section after the mouldine has been washed out with hot water. Mouldine is not the most satisfactory material to use here, and I shall be grateful if anyone will suggest something better.

a *b*

Fig. 7.

Use high fusing porcelain mixed with water containing a small amount of gum tragacanth paste. Pack in about pin, and pack hard clear to top of opening, k. Place sections of blotting paper at k and place in a vise to compress body and absorb moisture. Place the metal die in melting cup, and when melted remove the crown with pliers and it will appear as in Fig. VI.

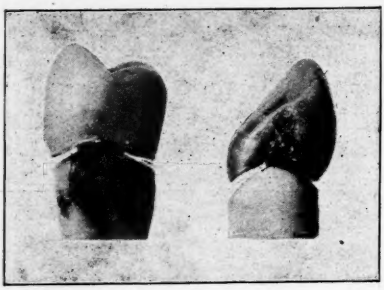
Carve crown to line l, m, Fig. VI, and proceed to bake. The body will carve like crayon. If any cracks appear after the first bake fill them in, make necessary additions, and give second bake.

The advantages I have obtained with this method are—(1) Minimum shrinkage of the porcelain and fewer bakes.

2. Obviate the difficulty of getting the crown hole in the proper place for the dowel pin.

3. The weakness of all other methods is the juncture or union of the crown to the dowel pin—here it is the strongest part.

4. No necessity to solder the pins of tooth to the dowel.



a *b*

Fig. 8.

5. No costly outfit required.

6. No worry about the color.

7. Easily made and little danger of a crown coming back broken.

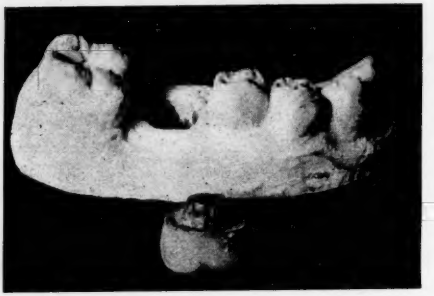


Fig. 9.

In Fig. 7, a and b, is shown an incisor crown in course of preparation. The tooth with saddle cap and pin in position is embedded in fusible metal ready for the packing of porcelain. The labial face is seen at a and the lingual at b. In the latter particular attention is called to the fact that the tooth pins are not needful for the success of this style of crown, hence no soldering is necessary.

Fig. 8, a and b, represents two finished crowns fitted to roots and

made after the foregoing principles. In a is shown a bicuspid in which an ordinary saddleback tooth was used, porcelain being adapted after the pressure method to complete the crown. The cuspid shown in b is representative of a finished incisor crown, a facing having been used in the same manner as in the case of the bicuspid.

So far I have not mentioned the mortise joint, this being particu-

Fig. 10.

larly applicable to molars. The mortise is made by the use of platinum foil burnished into cavity as perfectly as for an inlay. This method I use mostly when teeth present already decayed to the gum margin and I have difficulty in getting into the canals. In the lower molars the pulp chamber is already properly shaped

Fig. 11.

by nature so that as a rule little change is necessary. Fig. 9 illustrates a practical case with root prepared, and finished tooth with square mortise ready for cementing to position. In the many cases in which this method has been used by me I have yet to learn of such a crown becoming loose. In Fig. 10 is seen the same tooth in position in the mouth.

Still another method for molar crowns is shown in Fig. 11. This represents a swaged platinum cap with the addition of platinum pins adapted to the respective root canals, but in my opinion it is hardly as good as the mortise joint above described.

In each of the latter cases, Figs. 9, 10 and 11, the porcelain crowns are made after the same method as forms the subject of this paper.

IS IT WORTH WHILE?

BY J. S. CASSIDY, D.D.S., COVINGTON, KY. READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, AT LOUISVILLE, MAY 17-19, 1904.

The opportunities presented in this busy life of ours for securing profit and pleasure, as a just recompense for labor expended, and the love of ease to which we are naturally inclined, when immediate returns are not in sight, cause some of us older members to hesitate in welcoming extra tasks, such as complying with the courteous and flattering request of the executive committee for a paper; but nevertheless, it appears from the pages of our monthly journals that we never refuse to avail ourselves of this perhaps last chance for distinction. At the same time, in reading these journals we feel somehow refreshed at seeing new names, names of young men no doubt, scattered over these pages, which thereby evolve something like the acute vigorous freshness and sweet novelty of early spring amid the chronic emanations of the sere and yellow leaves of October.

Young men especially should be more generous with their intellect and leisure by furnishing their quota of papers to our dental societies. They should not imagine that, after being read to a respected and respectful audience, such papers as *they* could write would be necessarily lost to the world of dental literature, because of a mistaken notion on their part of the forthcoming superabundance of other and better productions. It does not follow that these blossoms of the brain are at all like those other blossoms which must die when the stem is broken. Try to realize the satisfaction of authorship and of duty done, in addition to hearing what may be of discussion and criticism, and the possibility of the whole thing being preserved in print at some time or other in the near future. This last consideration may seem to appeal only to vanity—just so, but remember that, according to Tullius, the old philosophers who wrote

of the vanities of the writers of their day put their own names to their own books just the same.

We have been fond of cultivating and cherishing the thought that the unexpected always happens, but we really do not believe in this idea until the thing does happen. We smile contemptuously at the mention of a new theory, and resent scornfully the disturbance of our conception of well-established facts, founded presumably on everlasting truth. Matter, for instance, is credited with the possession of the primal quality of inertia, persistence, that in whatever state it for the time being exists it would remain in that state forever were it not for coercive outside influence. In other words, matter has not of itself and within itself the power to change its own physical or chemical condition, hence, our long-accepted doctrine of the correlation of force and the conservation of energy. But here comes that curious little sun, named radium, and we perceive some of the strange effects of the energy, the vibrations it emits, on temperature, light and electricity, without any apparent external influence to account for the development of these phenomena. It appears to be something which by itself and through its own internal evolutions is changing into something else. Some of our self-satisfied knowledge of heretofore accepted facts is disturbed in consequence, and possibly we can now look with respect on the "multiple condensation" of Prout, and even without a smile of contempt on the theory of the ancients that "Matter is made up of one primordial element, nobody knows what."

Brief allusion to radium is made here only in the hope that you will receive graciously and criticise kindly, without regard to past opinions, a certain proposition based on an opposite theory to that which has obtained heretofore. If we find that our conceptions of the nature of things have been misapplied it is our duty to modify them accordingly. You probably believe in the truth of the old axiom that "Opposites love opposites," whereas it seems to me that they hate each other with all the bitter hatred of which they are capable. The attraction, for instance, between an acid and an alkali is not one of love. We cannot so regard it provided we have a reasonable conception of those four fundamental laws of nature, *persistence, resistance, coercion* and *equalization.* The acid and the alkali each persists in remaining as it is. Each is determined to compel the other to become like unto itself. Each resists the onslaught of the

other, and when the conflict between these two strong and equal opposites is ended their mutual destruction is complete, each loses its identity, and the formation of a neutral substance, neither acid nor alkali, results. Is it not so? This is the universal law, that no chemical or physical interaction, no contention, takes place between things that are in a state of equilibrium.

We may have previsions as to what certain chemicals will do under given circumstances, but in treating living bodies the mysterious physiological influences governing them seem to be ignored in many instances of practice. We, like our older brothers in medicine, through our knowledge of chemistry have been treating our patients sometimes as though their bodies were passive vessels, like inert test tubes or porcelain dishes, without control in the supply or disposition of their own contained substances.

The observant physician knows the effects of certain drugs on the physiological functions of the animal. He knows, for instance, that alkalies retard the action of those glands which normally secrete an alkaline fluid, and that they increase the output of those glands whose function is to secrete an acid. Notwithstanding this physiological evidence, known for many years, we still persist in the practice of treating excessive acidity, local and systemic, as in the mouth, stomach and other organs, with alkalies, which dosing of course neutralizes the acidity for the time being; but at the same time, in accordance with the rules of supply and demand and nature's desire for equalization, the after-effects witness the stimulation of those acid-supplying glands to greater effort, and the disease continues.

Some of you may consider our objection to alkaline treatment in cases of acidity as irrelevant because the acid in question is perhaps not always supplied by the glands, and may come through fermentation of extraneous contents, but even if we grant this proposition as probable, we can assert that an alkali is contraindicated because it preserves the activity of the acid-forming microorganisms by neutralizing the product, which to them is a malignant poison.

Now let us consider our own domain and ask in all candor, in the light of these physiological facts, if we are justified in continuing this ancient, purely chemical, practice of recommending alkaline washes for the mouth and tooth powders as an adjuvant to cleanliness in preventing dental caries? At the risk of being accused of posing as an iconoclast the writer ventures to answer, No—that while

it is a chemically correct deduction, from the fact that an acid is the immediate cause of solution of continuity in the part, it is not so physiologically. It may be correct treatment in free acidity of the mouth, inducing erosion of the teeth, but surely not for dental caries.

Caries is a disease of restricted progressive solution of tooth substance by, according to Miller's proof, nascent lactic acid developed at the point involved. Lactic acid is a virulent poison to the organized ferments that produce it, and in caries this poison is at once rendered inert by forming calcium lactate at the expense of the tooth, so if we supply an alkali to the part we preserve the lives of the microorganisms through the destruction of the redundant free molecules of the acid, thus helping them to continue their work on the carbohydrates that may be present.

Acids are incompatible with the welfare of acid-forming bacteria, hence our prophylactic philosophy, based on purely chemical laws, is evidently unphysiological, for our locally applied alkali destroys that which otherwise would destroy these ferments. In the manufacture of lactic acid on a large scale by supplying a culture of lactic ferment to glucose obtained from corn starch, lime is added to the fermenting mass in order to take up its equivalent of acid, that the lives of the ferments may be preserved and their multiplication and activity be promoted until all the material is properly disposed of.

Do mere mercenary manufacturers of lactic acid know more of this phase of dental prophylaxis than we of the profession do? It seems so. They know how to secure the safety of their invaluable microorganisms from danger and death, and we, for a different reason, follow exactly the same lines—in our case just the reverse from what it ought to be, for surely the preservation of one of the necessary factors in lactic fermentation is emphatically not the object of our treatment.

Immunity from disease is perhaps the leading question in the world of therapeutics to-day, and in our department activity in this direction has been shown by the efforts of Miller, Black, Michaels, Kirk, D. D. Smith, Williams, Bryan, Wright and many other shining lights in our profession, each adopting or suggesting some special theories and methods agreeable to the views they severally entertain in regard to the cases with which they deal.

Local conditions may be of minor importance in the estimation of many good thinkers on the subject, but nevertheless, when we do

prescribe local remedies we should do so with the certainty of their doing good rather than harm. An inert, mild abrasive, like fine pumice, might fill the duty as a substitute for alkaline powders, and meantime, somewhere in the future, some really effective means may be discovered and be proven able to inhibit *all* the factors involved in the cause and the propagation of dental caries.

The writer feels keenly the outrage committed by this paper against apparently scientific laws, and timidly asks himself, "Is it worth while" to thus oppose the settled convictions of a thousand years? However, it is the bounden duty of everyone who thinks he "Sees a hand we cannot see, and hears a voice we cannot hear," to enlighten us, so that we too may see and hear as well as he. This is what we are here for, with our minds alert and our mental attitudes so adjusted that disbursive and receptive moods are equally in touch with the wish to give and receive, and may the truth prevail.

Discussion. Dr. I. B. Howell, Paducah, Ky.: This interesting paper challenges our admiration, and while we may not be able to throw additional light on the subject, we think we can see the dawn of new light as the result of its practical suggestion. As to whether opposites are brought together and new substances formed by love or hatred is not so important a problem in this discussion as that of developing a rational treatment for the prevention or arrest of dental caries, but we may be certain of one thing, that in all such coming together there is at least some sort of an attraction. While we boys may be more ready to respond to the calls of committees in preparing papers, and watch anxiously for their later appearance in dental journals, this paper of Dr. Cassidy's demonstrates the necessity for continued work by older heads and maturer minds. Following the dim track blazed by the pioneers, the paper emphasizes the importance of a more rational treatment for the almost universal disease of dental caries than that heretofore taught us and almost universally accepted. It is only by repeated efforts of this kind that professions as well as individuals have been or can be driven from accepted views and theories hoary with age, however self-contradictory they may appear under the searchlight of scientific investigation. Who knows but that within a few years the occasional application of a dilute acid for cleansing and disinfecting the mouth with finely powdered pumice between applications may take the place entirely of our

unscientific alkaline washes and powders? A medical friend of mine over 75 years old, and with better preserved teeth than most men of his age, told me but a few days ago that this had been his practice in his own mouth for 55 years, and that he had always advised against the use of the alkaline treatment in cases of excess of acid in the stomach, preferring the use of tonics with some free acid before meals.

ORAL HYGIENE IN THE PUBLIC SCHOOLS.

REPORT OF THE COMMITTEE, BY THE CHAIRMAN, RICHARD GRADY, D. D. S., ANNAPOLIS, MD. READ BEFORE THE NATIONAL DENTAL ASSOCIATION, AT ASHEVILLE, N. C., JULY 28-31, 1903.

Your committee on Oral Hygiene in Public Schools hereby makes its third annual report. Its work is patriotic and national in scope, and its mission is of prime importance, as it is earnestly striving to make instruction in oral hygiene an essential part of public school education to millions of children, over twenty per cent of the entire population, by promise a nation within a nation, and the great republic of to-morrow. "Whatever we wish to see introduced into the life of a nation must first be introduced into its schools." Think of the immense possibilities of power that lie waiting in the elementary lessons of childhood.

Everything should be done to convince the people that the care of the oral cavity is absolutely necessary to the conservation of health. "Civilized peoples remove the accumulations of waste and foreign debris from other portions of the body, but often neglect so important a part as the mouth. They blow their noses, they swab their ears, they wipe their eyes, they manicure their fingers and pedicure their toes, they shampoo their scalps, they bathe their skin, they wash and perfume their armpits, they soak and soap their feet, yet they let their mouths go uncleansed."

Educational reforms originate outside the teaching profession. To outside influence is due the inclusion of manual training in the public school system, and the same may be said of public kindergartens, and the introduction of drawing into the schools of this country by the influence of manufacturers and business men. It is therefore not empty rhetoric to speak of the obligation laid upon

us, the dentists represented by this National Dental Association, to have the school authorities extend instruction in the principal law of hygiene to the domain of the mouth and teeth. Account yourselves happy that it is your lot to espouse so noble a cause in the beginning, to stand by its cradle, to see and to help it grow. Quoting Dr. Corley, "The difficulty of the undertaking is surpassed only by its possibilities." The medical profession counts as its greatest triumph the discovery that disease may be prevented as well as cured. The introduction of hygienic physiology into public schools has done more than any other agency to bring such knowledge into the home life of the people, and to change their thinking and their habits.

The tentative plan adopted at our first meeting was communicated to state and local societies and received with favor. "A wholesome move," in the words of the *Pacific Dental Gazette,* "and coming from the fountain head it will accomplish much." With the supporting influence of this Association (for in the words of Daniel Webster, "There are many objects of great value to man which cannot be attained by unconnected individuals") and mutual cooperation with school boards, we would inculcate in children the virtue of mouth-cleanliness and teach them hygienic habits which will stand them in good stead their whole lives long. Young minds are very susceptible, and they would readily understand, if properly taught, the serious results liable to follow the neglect of their teeth. Perhaps nothing will so hasten the time when body and mind will both be adequately cared for as the diffusion of the belief that the preservation of health is a duty.

General knowledge of the causes of dental caries and the means of preserving the teeth by regular care ought to form a part of the teaching of hygiene to school boys and girls. The subject of oral hygiene should be so graded as to teach simply facts which the child may comprehend. "I am firmly convinced," said Dr. Jacobi of New York recently in a lecture on physiology and hygiene as taught in the public schools, "that the rules for the preservation of health, which teachers should be directed to communicate to their classes, could be put in a tract of seven or eight pages."

The importance of keeping the teeth clean cannot be too strongly impressed unon the mind of every individual, and Dr. Cunningham lays stress upon the tooth-brush, which "is mightier than the den-

tist." "When the teeth are kept literally clean," says Dr. Parmley, "no disease will ever be perceptible. Their structures will equally stand the summer's sun and winter's cold, the changes of climate, the variation of diet, and even diseases." Any attempt to increase the knowledge of the nature of the teeth and to promote a proper care for them among children is a move in the right direction. As soon as we as a national organization, and in our state and local societies, commence to give knowledge that is of benefit to the public, they will view our efforts in a liberal way and will see that our work is for the good of mankind.

Text-books on oral hygiene have been prepared for the Mississippi Dental Association by Dr. W. O. Talbot, and for the District of Columbia Dental Society by Dr. H. C. Thompson and others. Dr. Samuel A. Hopkins of Massachusetts has published "A simple course of prevention that may be useful to the dentist, to the physician, and to the individual." Dr. R. D. Jones of Michigan has prepared "Your Teeth and Your Breath, a treatise upon how to have strong, regular teeth and a pure breath, together with the causes, results and remedies for defective teeth and foul breath." The latter was submitted in response to a resolution adopted by this Association in 1901, and includes about 125 pages. Your committee is not prepared to ask the Association to adopt that work, but recommends that the resolution, which reads as follows, be continued in force—"*Resolved,* that the president be authorized to enter into an agreement with some person or persons qualified to write a short treatise on oral hygiene, on the basis of paying a definite sum for services if the production should not be accepted, and a further amount if the work should be adopted by this National Dental Association, and that —— dollars be appropriated for the purpose."

It is inconceivable to some minds that men who are really competent will devote time to dental inspections which do not promise a money return, and as no fee is paid they think they have clear proof of base motives for the undertaking that they are only means of advertisement for the dentists. This suspicion proves only that those who make such statements are absolutely incapable of comprehending the importance of such researches. Nevertheless dentists must work to demonstrate to the public authorities the utility of protecting the health of the people. The engineer may disregard the red flag, still it pays to raise it and it may be criminal not to do

so. Victor Hugo says, "The great enemy of the night is the morning." "To every man his work."

Systematic examinations of the teeth of children from 6 to 15 years of age have been made on blanks, provided by this Association, and reported to the secretary of this committee by

Dr. T. P. Hyatt, New York, 560 children.

Drs. Merrill and Fogg, Maine, 122 children.

Dr. Habeggar, Pennsylvania, 368 children.

Drs. Nesbit, Allen, Rivers, Talbot, Libby, Mississippi, 385 children.

Through Dr. W. A. Johnson, Illinois, 3,652 children.

Through Dr. N. S. Hoff, Michigan, 280 children.

Through Drs. Stiff and Steele, Virginia, 1,173 children.

Of a certain number examined 53 per cent did not use toothbrushes, and only 37 per cent used a brush daily. For every tooth filled more than six unfilled cavities in permanent and temporary teeth were found. Only 65 out of 1,173 children examined in Richmond had no defective teeth, which confirms published statements that a systematic examination of the teeth at home and abroad reveals the fact that from 92 to 95 per cent are defective.

The writings and addresses of professional men on the subject of oral hygiene are familiar to you as readers of dental journals, but we cannot refrain from inviting your attention to one of the classics on oral hygiene read at the last meeting of the Southern Branch of this Association by Dr. J. P. Corley of Alabama, the paper by Dr. Alphonso Irwin of New Jersey on "Public Dental Service," and the main points of a conversation with a new patient who asks how to care for the teeth by Dr. E. A. Bogue of New York. We know of no papers in which the subject is treated with more judgment.

Public schools, as we know, are made use of for the dissemination of hygienic knowledge. The instruction in oral hygiene leaves much to be desired, judging from these quotations from textbooks—"Tartar affects the saliva and makes food hard to digest;" "a few drops of cologne or oil of rose may be added to lime water as a mouth wash if the taste is unpleasant;" "all amalgams, pastes and other cheap articles should be rejected both for the sake of the teeth and general health;" "to clean the teeth employ powdered charcoal;" "the enamel of the teeth may be injured by breathing very cold air through the mouth;" "when cavities have formed in

the teeth the dentist fills them with silver foil;" "hot as well as cold water may crack the enamel;" "in smoking there are very sudden changes of the temperature of the air in contact with the teeth and for the same reason this must injure them;" "when we are six years of age the milk teeth begin to decay and the second gradually take their place." Dr. Hoffen, quoting from the text-book used in Chicago—"The prevention of tartar fungus (is it possible Drs. Black and Miller have overlooked this one?) is best effected by the use of a weak solution of carbolic acid"—says, "I have had patients from the high school say they didn't see why they had that tartar on the teeth, as they used plenty of carbolic acid." Such teaching is mischievous, and dentists should denounce it. They must continuously, indefatigably, pointedly set the truth before pupils and teachers and parents.

There is real need for a committee on oral hygiene in every dental organization, and if the only thing done by the National Association has been to attract the attention of the authorities and the public to the importance of the hygiene of the mouth, it has meant a great advance. It seems hardly credible that such a movement, having for its only object the promotion of the health and happiness of the race, should be received anywhere with apathy, much less opposition, but that it has been so received adds but another argument in its favor and accentuates anew the prevailing ignorance upon this subject. One of the most unfair and prejudiced arguments from a member of an unsympathetic school board was: "The method would make the public schools unpopular. The movement would not be tolerated by the Johns Hopkins' University and Woman's College, hence why should the poor because of this necessity be subjected to anything they would resist were it in their power? By what authority does the school board order such an examination other than that it would affect the health of the neighborhood pupils by infection?" In striking contrast is the following report of Dr. Frank W. Stiff:

"From California Dr. C. Diechmiller reported that he had been unable so far to obtain permission from the political school board of San Francisco to go into the schools, but hoped in the near future to be able to do so, and asked for suggestions and 'terse, pointed literature.' In the hope that our experience in Richmond may help others in college towns, I will repeat substantially what I wrote

him. The unanimous endorsement of the movement was first secured from the local dental society, and a committee was appointed to appear before the school board for permission to make the examinations. Knowing how jealous school authorities are of the time of teacher and pupil, we were careful to impress upon the board that we would not consume any appreciable time nor would the work entail any cost to them. We simply asked for a room and that the children be sent us four or five at a time for five minutes. As each child was examined another would take its place, the one examined returning to the school room at once, having been absent not much longer than to get a drink of water. We represented that the movement was endorsed by the local society, many members of which were known by the board, and by this National Dental Association, the largest and most influential dental body in the world, under whose auspices the work was being done. We were also careful to allay any suspicions as to its being an advertisement of the dentists of the town. *Absolutely no objection was raised and consent was at once granted.* Our next difficulty was to get the dentists to do the work, as few were willing to give the time necessary. It was finally concluded to enlist the interest and cooperation of the senior classes in the colleges. This was readily done and two students were taken to each school and instructed how to make the examinations and fill the forms. I desire particularly to note that in my visitation of the schools, both as a member of the school board and to instruct the students in their work of examination, I have found absolutely no opposition on the part of teacher, scholar or parent. So far as I have been informed, no child has refused to be examined for any reason. The school authorities are greatly interested and are aiding us all they can in our work. One of the most progressive principals asked for a manual on oral hygiene, a 'tooth drill' he called it, for use by his teachers, and the principal of the high school, who was present when I was reminded of my promise to secure this aid, volunteered to have the matter typewritten and sent to all the principals for general use in the city. We will without doubt finish the schools of Richmond the coming term."

Helpful suggestions are solicited by the committee in the discussion of its report. Some have come to us which we commend to members for use by their state and local societies. Oneness of

aim does not imply indentity of means. In the words of the code of ethics, "Educate the public mind," with fresh zest and vigor.

"Man must be taught as though you taught him not,
And things unknown proposed as things forgot."

1. Bring the matter before the public by using the press, as suggested by Dr. L. P. Bethel.

2. Circulate rules for the preservation of the teeth of school children, as the British Dental Association has done.

3. Establish campaigns of education by public lectures, as has been done by the Alabama Dental Association.

4. Issue a pamphlet on the care of the teeth, as a California dental society has done.

5. Do as in Maryland, have medical and public associations, by resolutions, recognize the benefits of oral hygiene, and approve the efforts to give instructions to pupils of public schools on the care of the mouth and teeth; also donate tooth-brushes to fresh air societies to inculcate ideas of cleanliness.

6. Read the papers of Dr. Frank Allport in the *Review of Reviews,* the *Educational Review* and elsewhere, advocating systematic examination of the eyes and ears, which have influenced school authorities.

7. Until we have popular education on the care of the teeth do missionary work on your individual responsibility.

8. Let the dental colleges organize emergency corps, after the typical one at the Harvard University dental department.

9. Show the necessity for dental services to public institutions, which receive often unskilled service.

10. Speak out in meeting in the line of Dr. C. N. Johnson: "There has been a request from the National Association with regard to dental hygiene in the schools. I have the greatest desire to see our public schools, in the great cities especially, gone through with care by someone who is willing to devote a little time without the expectation of a fee, for the purpose of seeing what may be discovered—the accumulation of data that may be found through such circumstances. I have the greatest desire in my heart to do something to stop the ravages which we see in the mouths of young children. We see their beautiful teeth with not as yet the least sign of dental caries, but we see in our mind's eye five or ten years

from that time a mouth full of a great mass of dental work. If we could only do the work our profession would win the greatest appreciation from the public at large. I want to see something more done in that line, and to see every member of my society and of the profession insisting upon the proper cleanliness and care of the mouths of our children."

In conclusion, the committee asks to be continued in its present membership or by change of members, with authority to draw upon the treasury for future work, and to be known hereafter as "The Committee on Oral Hygiene in Public Schools and Institutions." We invite the cordial assistance of every officer and member. The cause is worthy, the work is ours.

THE FOURTH INTERNATIONAL DENTAL CONGRESS.

BY EDWARD C. KIRK, D.D.S., PHILADELPHIA. READ BEFORE THE PENNSYLVANIA STATE DENTAL SOCIETY, AT WILKESBARRE, JULY 12-14, 1904.

I am glad of the opportunity to say something concerning the Fourth International Dental Congress, its origin, its purposes, and the probable results which may be expected to flow from that great meeting for the general good of our profession. It seems to me quite clear that the forces which are bringing this movement to a successful issue are of unusual moment and of such importance as to be worthy of more than passing attention.

What first appeals to us in the consideration of this Congress is the magnitude of its several features and the extent of the interest which the world of dentistry is manifesting in the outcome of the meeting. We are accustomed to the incidents of our local, state and national meetings; we understand these expressions of associative effort, and we take part therein knowing quite well the benefits to be derived therefrom. We meet to exchange ideas, to give and to learn of professional matters, and to improve our efficiency as practitioners. It is through the agency of our professional meetings that we attain not only a knowledge of the latest advancements in the progress of our craft, but by social intercourse with our colleagues we develop our professional ideals beyond the limitations of a selfish provincialism and learn to respect the character and attainments of

our coworkers. These are in general the motives which bring us together and the ends to which our associations contribute. But there has been called to meet in St. Louis next month a gathering of dentists representing every civilized country on the globe. Each nation having any importance from the standpoint of professional dentistry will be represented by its practitioners and will contribute to the program the latest development of its dental progress, so that as a whole the St. Louis Congress will constitute an exhibit of the world's dentistry at this dawn of the twentieth century.

To prepare for this great event has been the work assigned to a special committee appointed by the National Dental Association at its meeting in 1902 at Niagara Falls, and confirmed by the Directory of Congresses of the St. Louis Exposition in 1903. Notwithstanding the comparatively limited time at command since the inception of the movement the work of organization has proceeded rapidly and upon systematic lines. Committees of publicity and propaganda have been formed in every important country of Europe, as well as in Australia and Japan, so that twenty or more nations are now concerned in this movement and are actively spreading an interest and securing support in every way for the meeting. Contributions to all departments of the program are rapidly coming in and to an extent that is causing no small difficulty in regard to their disposal. Each state in our Union is organized by the appointment of state chairmen who, working with their local committees, are collectively preparing the part which the United States is to perform in this dental congress of all nations.

While it is not possible to give exact figures, it may be safely stated that not less than fifteen hundred committeemen are actively at work throughout the world in preparing for the events which will together constitute the Fourth International Dental Congress. Upwards of three hundred clinical demonstrations are being provided for. The ten sectional divisions of the Congress, which will hold simultaneous meetings, will produce not less than one hundred to one hundred and fifty essays by the leaders of dental thought in all countries, covering all departments of our profession. Dental education, legislation, history and nomenclature will be the subjects of comprehensive reports made by experts who have for years made these subjects a specialty. The dealers' and manufacturers' exhibit of dental supplies now includes a larger catalogue of individual ex-

hibits than has heretofore appeared in connection with any dental meeting. As to the probable number of members who will participate, the indications now point to a larger paid membership than has ever before attended an international dental congress.

The provisions being made by the local committee of arrangements for the care and entertainment of members are upon a scale which assures the success of the social features of the Congress, a feature which after all is the most important civilizing influence in our dental meetings, and one which in a great international gathering contributes the most towards harmonizing the different national ideals, thus aiding the progress of dentistry as a whole.

To those in position to watch the growth of this world movement of our profession toward a common object the view is an inspiring one. The conception of our calling derived from a local environment at once loses its significance in the broader aspect which the international feature of this Congress presents for consideration. In our local, state, and national associations we meet with differences of opinion as to theory and practice, and out of the multitude of counsel we extract the grist of that wisdom which becomes in time our accepted standard of practice. Yet this diversity of opinion is among men similarly trained, speaking the same mother tongue and having the same patriotic sentiments and similar professional ideals. In an international congress are brought together the products of the most diverse systems of training, with corresponding differences of method and theory, and the added diversity of language and national characteristics which act as modifying influences in shaping the professional tendencies of each nation toward its own standards and aims.

Yet notwithstanding these characteristic national differences there remains the one professional ideal as the feature common to dentistry in all nations—the salvation of the human denture and the one animating desire to solve the problems of our calling upon an independent professional basis. Our profession is comparatively young, its position as a department of the great art and science of healing has brought it into close relationship with the profession of medicine. Indeed, so close has been the relationship at certain points that it has with some show of justice been claimed that dentistry is a specialty of medicine, and so strongly has this conception appealed to the minds of many that the attempt has often been made to engraft the

organized dental professional body as a branch upon the medical body politic. This attempt has signally and repeatedly failed and the failure has grown more and more conspicuous as the dental profession has increasingly realized the importance and dignity of its own calling and come to correspondingly respect it.

The attitude of mind of our professional organization, if I may so express it, has needed the developing influence of experience to so ripen it that a clearer conception of the position of dentistry among the beneficent callings of mankind might be formulated, and during the past twenty years the needed experience has come with its fruit of ripened judgment as a consequence.

In 1889 France issued a call for the First International Dental Congress. Previous to this the seeds of internationalism in dental associative work were sown by the establishment of a dental section at the International Medical Congress, held in London in 1881, and repeated at the International Congress in Philadelphia, in 1887. At these meetings the leaders of dentistry of the several nations were brought into contact and there was born the realization that while all were striving for a common ideal the methods of each were widely different, and that much good would result from a more intimate and specialized association that would give opportunity for the comparison and discussion of ideas upon an international and purely dental basis.

The complexity which the international features of the dental professional problem presented was such as could best be worked out upon a basis quite separate from the medical relationship, hence an international congress of dentists dealing exclusively with dentistry was determined upon, and it was France, whose leaders of dental thought were most deeply impressed with this idea, that took the initiative.

The Congress of 1889 held in Paris was an abundant success, which revealed the fact that the sentiment was strongly in favor of the independence of dentistry as a profession. This first purely dental congress, international in scope, accomplished the still more important result of practically demonstrating the good which might flow to all concerned by periodically bringing together in harmonious relationship the dental representatives of all nations for the discussion of those problems which are vital to the progress and success of dentistry as a profession throughout the world. In 1893 the Second

International Dental Congress was held in Chicago as the World's Columbian Dental Congress, and the third of these reunions was held in Paris in 1900.

Each subsequent congress exceeded its predecessor in importance as to magnitude of membership, output of work and general character of results. Especially there should be noted in this connection the growth of the spirit of internationalism in dentistry with each succeeding congress. The active and leading men of all nations have on each occasion been brought into close personal contact, and have learned to regard with respect the efforts which all are making to develop those factors which in each country are placing dentistry upon a higher scientific and social plane. That type of self-sufficiency and conceit begotten of ignorance which offends decency with its blatant claim of superiority over all others has been made unpopular by these great international meetings, and that higher and nobler spirit of according honor and praise to him who is deserving thereof, regardless of his nativity or the language in which he expresses his thoughts, is becoming the dominating principle in these associations, all of which is as it should be.

Dentistry has outgrown its swaddling clothes and is now in the period of a strong and lusty adolescence. It has developed into that independence to which it was from the first destined by virtue of its inherent usefulness to humanity, and it has grown otherwise. In the reaching outward of its spheres of influence it has escaped the geographical bounds which limit the activities of nations, and finding sympathetic response in the touch of the dental professional spirit in other nations has laid the first foundations for the formation of a dental world power which shall know no national limitations, but which shall regard our calling as of that higher order of truth and knowledge which is the exclusive possession of no country, though native it may be to some, yet it is withal a citizen of the world.

It will be seen that the international congress fulfills a function with which our state and national organizations are not directly concerned nor are they competent to deal. We discuss questions of education, legislation and reciprocity, but in their international aspects these matters develop a much wider significance. Our national pride and our patriotism are touched unpleasantly when, for example, Germany enacts legislation excluding the American graduate from practicing within its territory, yet in all justice there is something to be

said in defense of this attitude upon the part of our transatlantic neighbor, and it is the function and purpose of the international congress to develop the kind of attitude and produce the evidence that in the course of time will set such matters straight.

The international congress movement is a movement toward harmony, by comparison and discussion of those conflicting views which interfere with dental progress to bring about a readjustment of relations upon the basis of greatest advantage to our profession throughout the world. Much has already been accomplished. The spirit of internationalism in dentistry has taken root and is rapidly spreading its influence among the nations so that already the fruits of its harmonizing tendency are apparent.

Not the least important step which has been taken toward conserving and developing this international spirit of confraternity among dental practitioners the world over is the creation at the Paris Congress of the Federation Dentaire Internationale, an organization of all the delegates representing the several nations at the congress of 1900. The purposes of this Federation are to foster the objects for which international congresses are held, and to promote and organize all movements which in an international way can contribute to the advancement of the profession of dentistry. The Federation is represented by an executive council which has power to act upon behalf of the Federation as an ad interim committee to accept invitations, to hold international congresses, and to designate the time and place for holding them. The organization of the international movement is thus planned and assured upon systematic lines, and it is at St. Louis in America that the first period of organized activity of this great power in dentistry will be terminated and the second period inaugurated.

In all probability it will be many years before such a notable meeting will again be accessible to American practitioners in their own country. We are on the eve of perhaps the greatest event in the history of the world's dentistry. Every professional consideration and every purely selfish interest alike demand that we should take an active part in this congress. Let the man who claims that American dentistry leads the world go to St. Louis and help to substantiate that claim next month or else hereafter forever hold his peace. America has issued the invitation and you have taken your part in confirming the action of our National Association in asking the dental represen-

tatives of the nations of the earth to be your guests at St. Louis. The committee has done its work, the feast is prepared, the guests are even now arriving; let us one and all embrace the opportunity to show them in the best sense our qualities as hosts, and at the same time learn something in a practical way of the good which must accrue to our profession from the development of the international idea and then give it practical furtherance by our individual efforts.

ANATOMY, PATHOLOGY AND SURGERY.

REPORT OF THE CHAIRMAN OF SECTION V, NATIONAL DENTAL ASSOCIATION, BY THOMAS FILLEBROWN, D.D.S., BOSTON. READ BEFORE THE NATIONAL DENTAL ASSOCIATION, AT ASHEVILLE, N. C., JULY 28-31, 1903.

The past year has shown no great progress or discovery in either anatomy or surgery, but much has been accomplished by research to make more clear the facts discerned in the past.

In pathology the identification of the smallpox bacillus has made the year notable, the account of which discovery by Councilman is published in the *Boston Med. and Surg. Journal.*

In a paper read before the American Medical Association in June, 1902, Dr. V. A. Latham gives an interesting and instructive "Resume of the Histology of the Dental Pulp." Also a paper (DIGEST, August, 1902, page 658) by Dr. R. R. Andrews, read on the same occasion, on "The Embryology of the Dental Pulp," is of much interest. Dr. Talbot also read a valuable paper before the same association on "The Evolution of the Pulp" (DIGEST, May, 1903, page 584).

In the DIGEST of April, 1903, page 449, appears an excellent article on the "Comparative Anatomy of the Teeth," by D. F. Luckey, read before the Missouri State Dental Association.

In the *Dental Cosmos*, 1902 (DIGEST, June, 1903, page 708), appear a series of papers by W. D. Miller, entitled "Introduction to the Study of Immunity in Its Relation to the Diseases of the Mouth and Teeth," which are worthy the attention of every thoughtful student.

Harvey Cushing (*Annals of Surgery*, 1903) reviews experimental operations in the surgical treatment of facial paralysis by

nerve anastomosis. The facial nerve, severed at a point near the stylomastoid foramen, was united to accessory nerve, the "end lateral" suture being employed. The author gives an interesting account of his own successful case, with gradual restoration of function.

A. E. Schmitt (*Am. Jour. Med. Sciences,* 1903) contributes to the surgical anatomy of the temporal bone, describing a procedure for extensive dissection of the mastoid. By certain boundaries he outlines a square upon the surface of the process which he again divides into four equal spaces. These subdivisions in almost every case correspond to (1) mastoid antrum in upper anterior square; (2) the lateral sinus in upper posterior, and (3) to the mastoid cells in the two lower. The surface thus being mapped out, operations at this point are greatly facilitated.

"An Operation for the Radical Cure of Aneurism, Based Upon Arteriorhaphy" is the subject of an interesting article by R. Matas in *Annals of Surgery,* 1903. In the operation described the sac is not extirpated nor disturbed, further than to evacuate the contents. The orifices of the artery in the sac are then sutured from within, thus preserving the lumen of the vessel.

Harvey Cushing in *Annals of Surgery* calls attention to causes of shock as being injuries exerted on peripheral afferent nerves, producing a fall in blood pressure, and emphasizes the fact that the liability to shock is lessened by perfect hemostasis, but where large nerve trunks must be divided local cocainizing will prevent the profound depression which follows extensive operations like amputations.

C. H. Cargile (*Hot Springs Med. Jour.*) suggests a plan for avoiding adhesions after laparotomy by covering the stumps, pedicles and denuded surfaces with serous animal membrane. He uses portions of the peritoneum of the ox, the membrane being thoroughly sterilized. "Animal velum" is the name given to it, and it is nonirritating and readily absorbed.

H. P. Mosher (*Boston Med. and Surg. Jour.*) gives the result of the use of Cargile membrane in preventing adhesions in the nose after operations, particularly cautery. He states that next to the peritoneum the nasal cavity is most liable to adhesions, and gives a favorable report of the effects of animal velum used in small wedges between opposing surfaces.

Willard Bartlett (*Annals of Surgery*), under the title of "Surgical Anatomy of the Middle Crania Fossa, With Special Reference to Operations for Removal of the Gasserian Ganglion," gives an average of measurements indicating the position of the middle meningeal artery. This vessel varies to such an extent as to be a great source of danger in chiseling.

In connection with the subject of "Healing of Nerves" C. A. Balance and Purves Stewart (*Annals of Surgery*) have established a theory of great clinical importance. They have proven that the distal segment of a divided nerve is not the inert, degenerate, passive structure which depends for its repair solely on the shooting down into it of axis-cylinders from the proximal or central segment. They have shown conclusively that it contains within itself, in its power of producing neurolemma cells, the ability to form neuroblasts and fresh axis-cylinders.

Leo Loeb (*American Medicine,* 1903) records the results of experiments showing the influence of heat upon pieces of sarcocarcinomatous tissue as affecting growth after transplantation. The power of transplanted pieces to produce tumors was weakened or destroyed by heating to 45 degrees C. for thirty minutes. Transplantations were made in white rats by excised pieces in bulk or by injections of minced tumor tissue in normal salt solution. The author proves experimentally that different tumors of similar structure may have a very different faculty to infect other tissues by mere contact.

"Theories of the Parasitic Origin of Cancer" is the subject of an article by Roger Williams in *Twentieth Century Practitioner,* 1903. The author propounds the question, "Do cancers and other neoplasms arise through a modification of formative processes, or are they the outcome of an inflammatory process due to the intrusion of microorganisms or other irritants from the outside?" He discusses the various theories, including microbic, bacterial, protozoal, and those based upon contagion and infection, and reaches the following conclusions: (1) There is slight evidence of the contagious or infectious nature of malignant disease. (2) There are no facts to support the theory of a specific cancer microbe. (3) If malignant growths are the result of external irritants, the nature of the latter has not yet been determined.

W. B. Coley (*Trans. Am. Surg. Assn.*) discusses "The Influence

of the X-ray Upon Different Varieties of Sarcoma," especially those of the axilla, pectoral region and neck. The result has been total disappearance of growth and no recurrence. His conclusions are: (1) That the X-rays exert an inhibitory action on all forms of malignant disease, especially sarcoma. (2) That inoperable growths (sarcoma) may entirely disappear under the X-rays, often without breaking down of tissue. (3) That the question of recurrence is not yet decided. (4) That the field of effectiveness of X-rays is much larger than heretofore supposed. (5) That the X-rays have the remarkable effect of relieving pain in nearly all types of malignant tumors.

A PLEA FOR THE ABANDONMENT OF VULCANITE FOR BASE-PLATES.

BY R. C. BROPHY, M.D., D.D.S., CHICAGO. READ BEFORE THE NATIONAL DENTAL ASSOCIATION, AT ASHEVILLE, N. C., JULY 28-31, 1903.

I feel fortunate in having been invited to read this paper at this time, for I am unable to conceive of a more fitting place to present a theme of moment to the world of dentistry—as I hold this to be—than before the National Dental Association. The light thrown out to protect the mariner from the shoal and the rock, the beacon from whence the signal is flashed, must be placed conspicuously. From the source of greatest potentiality only can maximum power be derived. This association stands as the cynosure of the dentists of the world. The ambitious, aspiring and progressive men of our profession watch with interest the deliberations of this body, and regard them as entitled to their consideration. So I feel it is fitting that a plea for the abandonment of vulcanite for base-plates, in order that it may receive the notice and consideration which it merits through its importance, should be made before this body.

I stand to-day a radical opponent of vulcanite plates, and the views which I am about to express are radical, but though I treat this subject in the strongest language, I feel that I shall have many able supporters among the members of this body. Indeed, it seems incredible that any knowing man can entertain a sentiment in favor of or even condone the use of vulcanite as a base-plate ma-

terial. Antipathy to its use is not a new thing with me, and my convictions are so deep-seated that they are immune from counter-conviction. This latter expression may not meet with popular approval, for when a man says he cannot be made to change his mind he manifests as a rule a very unapprovable disposition, yet a man can produce sufficient substantiatory proof of the validity of his reasoning to merit credit for decidedness of conviction. It would seem that a man should be more severely criticised for lack of independence of thought and positiveness of conviction than for possessing and exercising them. A somewhat extended experience and some special investigation have brought me to my present viewpoint.

First of all, let us speak of the incompatibility of vulcanite to the mucous tissues of the mouth, when it is held in contact with them by capillary attraction. It is a well-known fact that vulcanite is an extremely poor conductor of thermal changes. That it is a physical property of this material to very slowly conduct heat is a fixed principle in mechanics, and as a natural concomitant it follows that it absorbs and retains heat to an exaggerated extent. This matter has been a subject of special investigation, and by experiments I have proven that in comparison with the metals ordinarily used for base-plates vulcanite dominates them in this property to a marked degree.

It is my belief that the property of non-conductivity of heat of vulcanite is responsible for the pathological effects produced upon the tissues, through their constant maintenance in a superheated condition. The fact that it is only where the contact of the plate to the tissues is made fixed by positive capillary attraction that the objectionable results are in evidence I regard as proof of the correctness of this theory. Further, it is this fact which leads me to admit that in those cases where the base sets loosely upon the tissues, as in lower dentures, vulcanite from a standpoint of compatibility is not so objectionable.

I make no note of the fact that vulcanite, through its coloring matter, is a poisonous substance, for I do not think that this fact is at all responsible for the deleterious effects of the material upon the human tissues.

From the standpoint of hygiene vulcanite as a base-plate material is objectionable. Even when care is taken to keep a vulcanite plate

clean it will still present an obnoxious appearance when removed from the mouth, and will throw off a disagreeable odor. The odor of a vulcanite plate when taken from the mouth is in no small degree intensified by the natural odor of the material being superdeveloped by the body heat. When worn by one of the very many who are indifferent to the care of the mouth the conditions existing both in point of seeing and smelling know scarcely a comparison for intolerability.

While plates of all kinds will of course assume a condition of uncleanliness, and will when cleanliness is not exercised become foul-smelling, it is for vulcanite and the preparations of celluloid only that these characteristics exist to a degree which adds potently to the list of reasons why they should not be used.

Vulcanite is a vegetable compound, and as such I have never been able by any law of physiological science to reconcile its use for any purpose where it is held more or less fixedly to animal mucous tissues. I do not think that science indicates anywhere an affinity between animal tissue and vegetable matter when they are brought in contact externally, nor that there can be compatibility between them. Animal tissues are most delicately sensitive to the invasion of foreign matter; extraneous matter is met with ready and positive rebellion; but few substances are tolerated by it, and most assuredly vegetable matter is not of these.

In the field of surgery proper we are taught this lesson. Where is the surgeon who would think of employing a vegetable substance for suture, or in any capacity where contact is expected to be at all enduring, or where physiological action must not be interfered with? I feel that from a scientific standpoint the dental profession is disgraced by the use of vulcanite. A profession of honorable standing as a scientific body persistently following a course of practice which has not one single scientific sanction comprehends the dental profession as it stands to-day, a servile devotee of this practice, well known and privately admitted by probably a large majority of its members as being wrong, and as reflecting more than any other one thing upon the credit of dentistry as a science. Holding to a practice which is not supported by a vestige of scientific data, which in fact is opposed to the very laws of nature which we are supposed to support, it stands us in hand, until we can right the matter, or at least make an effort to right it, to forego our claim

that science and an honest effort to subserve humanity's interest guide and govern us.

There are some other phases of the use of vulcanite in dentistry which I should like to discuss at this time, but the title of my paper confines me to a consideration of its use for making base-plates. I cannot refrain from saying, however, that in its use of pink vulcanite as an imitation of nature's color of the gums the dental profession warrants its complete and absolute ostracism from the sphere of true art. It is true art to conceal art. Does pink vulcanite do this? Is the dental profession color-blind? And what is being done by us to better this condition? Absolutely nothing. In a Happy Hooligan fashion we are going right along, using anything the manufacturers choose to give us, with scarcely a man in the profession giving a thought or raising a voice to bring about improvement.

Finally, in closing, I would again diverge from my title theme by referring to the effect which the use of vulcanite has had upon the standard of skill of our profession. Not only have the science and art of dentistry been degraded by the use of this material, but the standard of mechanical skill has been lowered by it to an extent which in its use excludes us from the skilled artisans' class. A large percentage of the vulcanite plate work is done by individuals—you note I do not say men—who are not dentists, and who even from a mechanical, to say nothing of the scientific or artistic aspect of the case, are ignorant and incompetent. Even though they were competent, as employes of the modern public dental laboratory or factory they would be unable by virtue of the adverse conditions under which they labor to do creditable work. In vulcanite work skilful manipulation has become subordinated to cheapness of production. It would appear that the idea has come to prevail that mechanical skill is not of very much importance in making this class of dentures. At any rate, to the shame and disgrace of the profession, in the face of the fact that in the making of vulcanite dentures the standard of skill exercised has been debased to a level with and even lower than that of the ordinary craftsman, no voice of alarm is heard for the general credit of dentistry as, in part, a skilled mechanical calling.

What shall we do perhaps is being mentally asked by some of my hearers. What shall we do? Let us go back fifty-two years, to the

unfortunate time for dentistry when vulcanite came upon the stage as a material for dentures, and learn the lessons of that age in this work. Then we will awaken to the fact that the mineral world alone, from every physiological and hygienic, and hence every scientific point of view, and from every artistic standpoint, supplies us with material perfectly adapted to our uses as dental prosthetists, and that mechanical skill in every line of our effort pertaining to the mechanical part of our work and to the subservance of the artistic is essential to the creditable and successful practice of the profession of dentistry.

Discussion. *Dr. J. Y. Crawford,* Nashville: I condemn the practice of putting vulcanite in the human mouth, and the increasing importance of dental work will eliminate it to a great extent, for the more we treat mouths with a view to saving the teeth the less need will there be for these full dentures.

Dr. George H. Wilson, Cleveland: I believe there will always be a need for prosthetic dentistry, for so long as poor people are with us the use of some cheap base is necessitated. It is true that harm is done by placing any organic substance in the mouth, but the greatest condemnation should be placed on the improper methods of manipulating the material rather than on the material itself, for if manipulated properly it is not so objectionable. It is radically wrong for the dentist to take the impression and then have the plate made by the outside man, because the latter cannot do the case justice. As a whole I am in sympathy with the views of the essayist. Many people who are to-day wearing vulcanite plates would have something better if advised by their dentists, and there are to-day better materials to use for this purpose.

Dr. S. J. Spence, Chattanooga, Tenn: A man is of little account unless his ideals are ahead of his practice, and it is pleasant to see that such is the case in this association, for while our practice may be vulcanite our ideal is metal. I think the time is not far distant when aluminum plates will displace vulcanite. They can be made almost as easily, are more durable, are better conductors of thermal changes, and unlike vulcanite, they do not contract and affect the adaptation to the surface covered.

Dr. T. W. Brophy, Chicago: We all know that the alveolar process becomes gradually absorbed after the teeth have been extracted,

and that in old age it disappears and the upper jaw becomes narrow and flattened. The vulcanite plate hastens this absorption, because on account of its being a non-conductor it is not capable of carrying the changes of temperature to the tissues beneath, so we have a rapid destruction of membrane and bone. After the plate has been in the mouth awhile it begins to move, and the resulting friction hastens the process of absorption. In people not over thirty years of age who have worn vulcanite dentures eight or ten years we find that the alveolar processes have shrunk until their surfaces are almost flat. I do not think Dr. Wilson's argument that we must provide for the poor is well founded, because even the best plate is very cheap. It costs more money to buy the boots a man wears in a year than to pay for an artificial denture, and an individual would have to be very poor indeed to be unable to pay for an aluminum plate. The dentist should advise his patients what to have and not allow them to dictate what should be used. The dentist is largely to blame for patients wearing their plates too long. There is a constant change in the alveolar processes from the time the teeth are lost until extreme old age, and the moment a plate begins to move a little the absorption becomes more rapid. I do not believe a person should wear a plate of any material, no matter how well constructed, over five years, or eight at the outside.

Dr. B. H. Teague, Aiken, S. C.: I would call attention to a plate to be used in those cases in which there is a great deal of absorption. Where the lower jaw is so shrunken that the plate of ordinary shape would not be retained, have a metal plate stamped to fit the shrunken alveolar process, and around the center of this plate have soldered, an equal distance between the lingual and buccal edges, and extending from one end of the plate to the other, a piece of 25-gauge plate, which may be from one-eighth to one-fourth inch high, according to the demands of the case. Solder it to another plate the opposite of the lower one. This is the reverse of the plate which covers the process, and in the concave surface of it may be placed the teeth attached by means of rubber. The idea is to have a decided concave surface both labially and lingually between the upper and lower plates joined by the vertical strip of gold plate, so that the tissues may hold the plate in place by folding in upon it along both sides.

Dr. J. D. Patterson, Kansas City: I am not prepared to admit the injury from a vulcanite plate properly constructed and vulcanized

from one and one-half to three hours at a low temperature. Clinical experience teaches that adhesion can be more perfectly accomplished with vulcanite than with any swaged or pressed metal plate, and the denture is more comfortably worn. The whole argument against vulcanite is that it does not allow the conduction of thermal changes to the tissues beneath it, but any injury does not come from that cause, but because of a poorly fitting plate, or on account of filth, bacteria and fermentation, and all these may be present with a metal plate. The injury may also come from pressure that prevents the tissues from performing their function. Of course where there is irritation there may be inflammation, but the argument that vulcanite causes same because of its being a nonconductor is without scientific basis that I can see. I would ask Dr. Brophy on what he bases his assertion that the oral tissues require extreme thermal changes for their well being, and I will make the proposition that extreme heat and cold are not of benefit to those tissues except in diseased conditions.

Dr. T. W. Brophy: I maintain that the tissues beneath a vulcanite plate, because of the nonconductivity of that material, are constantly being maintained in a superheated condition. This is the important point, not the question of heat or cold from the outside. We all know that vulcanite has the effect of creating a pathological condition in the tissues which it covers, and that in cases where a vulcanite plate has been worn a great length of time the mouth will immediately assume a normal condition when that plate is taken away and a metal one put in its place.

CONSERVATISM IN DENTAL EDUCATION.

BY S. W. FOSTER, D.D.S., ATLANTA, GA. READ BEFORE THE NATIONAL DENTAL ASSOCIATION, AT ASHEVILLE, N. C., JULY 28-31, 1903.

To write on the above subject I can hardly do more than reiterate. Dental education is a hackneyed subject; one which has during the past fifteen years engaged the attention of every class of men in the profession. The good, bad and indifferent at almost every society meeting have let no opportunity pass without expressing an opinion, volunteering suggestions, and not infrequently assuming a pessimistic view, concluding by deploring the state of affairs and charging the colleges with being responsible for a ma-

jority of the evils which appear to them to exist, such as receiving and graduating illiterate and incompetent men, turning loose upon the world dishonest advertising charlatans, etc. That such conditions exist in a measure cannot be denied, and that these criticisms of the colleges have brought forth good fruit is also an established truth.

The great cry both in the colleges and in the profession has been for a more elevated standard of preliminary requirement. The progressive advances in dental education demonstrate earnestness on the part of the colleges to meet this demand. But let us inquire, are we consistent in our advances? Has the crystallizing thought in our colleges reached the proper conception of what these so-called higher qualifications should consist? That a thorough literary course plays an important part in attaining this qualification cannot be denied, but that it is the all-important requisite is a most erroneous idea.

Morality, mechanical genius, persevering diligence and other qualities are as important factors in making a satisfactory student and an all-round successful practitioner as a diploma from a literary college. It is the exception where men who are failures and who drift into advertising quacks come from the ranks of those who are endowed with these principles. I do not mean to infer that failures more frequently come from those who are graduates of literary colleges, but an educated man who does not maintain a high moral character, persevering diligence and manipulative ability will not prove a success or an honor to his profession.

The greatest influence for evil in the dental profession at the present time is the attempt on the part of some to rob dentistry of its professional robe and drag it down to the level of an advertising commercial business. Who are the men doing this, may I ask? The answer is not found in their not having a literary degree, but in their lack of true morality, honesty, manly worth and correct college professional training.

Let us cast about and see if the profession is not somewhat justified in charging the responsibility to the colleges. They have gradually increased their standard till the requirement for entrance without examination is a certificate of entrance into the third year of a high school. This requirement seems sufficiently low, but I am convinced that it meets every necessity.

Great emphasis too has been placed upon this feature by the colleges and profession, while hardly a passing consideration is given to any other requisite. Are the colleges in a measure not responsible to the profession for results when they receive into their classes young men without first inquiring into their fitness from a standpoint of honesty of purpose and purity of heart to cross the sacred threshold of the dental profession and assume that all but sanctified responsibility of which the degree of Doctor of Dental Surgery should be the insignia?

I have a tenfold more buoyant hope for the ultimate success of the student who presents himself with perhaps only a moderate education, limited finances, and from an humble home, but who comes with the benedictions of a godly parentage, and who brings the sparkle in his eyes of radiant, ambitious hope, and presents his church certificate and credentials of high moral character, than I have for him who comes with an arrogant air of conscious superiority, immaculate in his dress, and who presents his college diploma and condescends to enter upon the duties of a dental student.

Let the colleges admit young men with sufficient education and whose hearts are right, then teach them the principles of truth and honesty, embodying *all* that is contained in our code of ethics, as earnestly as they teach dentistry per se, and when these shall have completed their college course let the profession extend to them an encouraging, sympathetic, helping hand, and the time will come when the man who deliberately dishonors his profession will be all but extinct.

Dentistry is a compound profession. To become a success a student, in combination with other requisites, must have manipulative ability. Many a man otherwise qualified has drudged through college only to meet with disappointment and failure on account of deficiency in this important essential. Unfortunately we have but a limited opportunity of ascertaining this quality before a student enters college, but thanks to our modern methods of technic instruction the colleges are enabled to form an accurate idea of the student's ability during his first year, and it is the duty of the college at all times to discourage those from continuing whom they have reason to believe cannot accomplish this department of their work satisfactorily. Thus by our systematized methods of teaching it is possible to weed out, as it were, the greater failures during their college course.

This is an age of progress and it is gratifying to note that during

the present generation dentistry has not only kept pace with but has outdistanced other professions, and our mode of teaching during the past twenty-five years has developed from a heterogeneous mass until we now have the most completely systematized curriculum of any profession. Our preliminary requirements are equal to the average college teaching of either medicine or law. We have added more to our curriculum during the past twelve years than any other profession, and it is expected that beginning with the next college term one more year is to be added, making four years before a student can receive his diploma.

Let us ask if in our eager progress we may not possibly be moving too rapidly in advance of proper legislation? Does this advance at the present time really benefit dental education and the profession? In a limited way we answer in the affirmative, but in the main I fear not. Let us reason. We have lengthened our course year after year, and at the same time we have raised the entrance requirements and are annually concentrating and facilitating our method of teaching with the use of modern appliances, such as electric motor power, X-ray demonstrations, projective microscopy, etc. With our system of technic is it not reasonable to suppose, notwithstanding the fact that the useful media of our profession has daily taken deeper root and broadened, that modern advantages offered the student are equivalent to these advances? Who will deny that the freshman student to-day receives as much instruction and acquires as much knowledge in dentistry as did his predecessors ten years ago in two years? The momentum of the present in every department of life is such that time is an important factor.

The National Association of Dental Examiners says to the colleges, "We will not class you as reputable unless you teach a prescribed time before graduating a student." At the same time the laws in many of the states say that any man may apply for license before the state board, and if found proficient he shall be made a legalized practitioner whether he holds a diploma or not. What are the facts? These same gentlemen, members of the N. A. D. E., are granting licenses year after year to men who have taken only one or two years of college work. Does this indicate that these men are incompetent or that the boards are derelict in their duty? Not by any means; but through their intelligence and the modern method of teaching they have been equipped for practice, and notwithstanding that they would most highly appreciate a diploma, the value of

time and force of circumstances are of such importance that they seek their only alternative (which under the law is the highest authority after all), and that is a license from a board of examiners. What is the result? In those states not demanding by law a diploma the profession is becoming crowded with undergraduates who have been licensed by the boards. For statistical reference I mention the great state of Texas with about eight hundred practicing dentists less than forty per cent of whom are graduates. These conditions are not sectional, for we find about the equivalent ratio in Rhode Island, Vermont and New Hampshire.

Is the four-year course wise with our present laws? Will not the lengthening of the term deter many from putting forth the extra effort to obtain their diplomas and cause them to seek the board for license at the end of one of their intermediate college years? I apprehend that this will be the tendency and am persuaded that too rapid progress in advance of legislation is not best, but that a greater number could be benefited and a higher average education attained should our enthusiasm be hedged about by conservatism and the standard for graduation be kept within the radius of an encouraging zone.

Discussion. *Dr. M. S. Merchant,* Giddings, Tex.: After fifteen years' experience on examining boards, six years of same being since the present law went into effect, I believe that with the high preliminary standing that is required three years is long enough, for in that time a man can absorb enough education in the dental line to enable him to practice successfully. I heartily agree with Dr. Foster, especially as regards the preparation of the heart as well as the mind.

Dr. H. W. Rodgers, Boston: While the essayist spoke of high preliminary requirements, I think he is inconsistent when he condemns the man with the college degree. He spoke of his arrogance. In my relations with college men in the school I have failed to note this arrogant attitude, unless quiet manners and culture are arrogance. In the last graduating class of the dental school with which I am connected were five men holding the A.B. degree, and they were graduated with the cum laude degree, which shows that they attained the highest efficiency in their class. I strongly condemn sentiments which will tend to discourage college men from entering the profession of dentistry.

Dr. E. A. Bryant, Washington: Dr. Foster's paper seems to merit commendation. The gentleman who has just spoken has evidently not taken into consideration another teacher of high standing, Dr. E. C. Kirk, and his remarks as to the students under his care. At the meeting in Stockholm a year ago he sent a letter stating that his experience was that the best students, who produced the best work and made the best dentists and the least failures, were the men from the manual training schools and not those with college degrees. We need men with the degree of M.D., as there are certain scientific branches which are absolutely required in city practice, but they are not needed by the general practitioner. If we were educating all our dentists to be specialists and to practice only in the cities that might to some extent hold good, but we are also educating them to practice in small towns and in country places. The higher educational theory has been going on for some time under the three-year course. I have made the statement before that the three-year term has not turned out better dentists than were made in two years. Other studies have been added, but as a rule they are not such as will be of advantage to the young practitioner. Dr. Brophy tried to establish a college which would accept only students with an M.D. degree, but it was a complete failure. According to the courses of to-day we have not dental colleges, but adjuncts to universities. Dentists as teachers are becoming scarce, and the teaching is done now from the medical standpoint. The dental student is pursuing studies laid down for the medical student for the purpose of educating him in medicine and not with the special idea of his practicing dentistry. In the present condition of confusion you will have a hybrid that will be neither a dentist nor a physician. Although he has taken almost the same studies as the medical student, who will say that he has knowledge enough to practice medicine? Formerly we had an assistant in the office and he became the dentist. Then mechanical dentistry was relegated entirely to the assistant, but to-day we do not need mechanical dentists as assistants. We have a mechanical laboratory which is taking out of the hands of the young men this class of work, which as a rule they are competent to do when they start, and it is also practically taking the bread out of their mouths, but at the same time it is the result of present methods of teaching.

Dr. S. H. Guilford, Philadelphia: As a profession we stand in

a peculiar position, having the theoretical side on one hand and the practical on the other, so we should view this question from both sides. It is desirable that all who enter upon the study of dentistry should have a good preliminary education and it is apparent that there should be an inherent liking for mechanics. Without both of these good professional men will not be turned out, but if I had to choose between the young man who was deficient in preliminary education, but had a taste for mechanics, and vice versa, I should take the former, not that I undervalue the early training, for I had my own son take the degree in arts before studying dentistry. Study was easy for him, but there were others who stood just as high in the class who had never had the same early opportunities. We must consider the service the dentist will be able to render his patients, for that is the important thing. I have known many men without good literary training who settled in small communities where the people were willing to overlook this deficiency, and they succeeded very well. Many of those who have shown the best results have had some previous training in mechanical arts—young men who had learned watchmaking or had worked in factories making delicate parts of machinery. They were skilled, and their hands and eyes were trained, so that they did their work in the most perfect manner. I think young men of this type will render the best service to the patient.

Dr. T. W. Brophy, Chicago: Dr. Guilford speaks of the theoretical and of the mechanical side of dentistry, but I hold that there is no such thing as the theoretical side of dental teaching, for dental teaching is scientific, and scientific teaching is not theoretical. We have the scientific side and the art side. It is not only scientific, for it is based on the results of careful investigation and is really an art. Theory should never be taught. It should be investigated in the laboratory, and after a theory has been sufficiently tried to establish a fact the fact only should be presented to the students. As Dr. Bryant remarked, a number of years ago the Chicago College attempted to make specialists of medical men by accepting and graduating only medical men as doctors of dental surgery. Perhaps there was at that time a very good reason for so doing, but the dental college curriculum has been so broadened that it now embraces all the different branches of medicine and collateral sciences, and is presented in such a way that to-day there is not the necessity

for the course of medicine that existed twenty years ago. The course of instruction has been multiplied at least threefold. If it was necessary eighteen years ago to have two years of six months each, it is certainly necessary now to have four years of seven months each, for we have more than twice as much to teach as we had then. I don't believe it is the proper thing to intimate that the college man is not inclined to place himself in the proper relation to the dental school and gather all the information obtainable therein, nor to suggest that he has not as great an ability to develop in mechanical dentistry as those of less education. It is not his training that will detract. We are apt to fall into this error of thought because some men who have not had the college training, but have had all that the essayist outlined as the best qualities of manhood, have succeeded. It is not just to say that the college man does not possess these qualities also.

Dr. Jonathan Taft, Ann Arbor: Dr. Brophy has taken up a very profitable line of thought. The dentist should be educated not only to make little mechanical appliances, but to develop himself into a true man—a strong, cultured man who shall have an influence for good and who shall benefit mankind. Many seem to think that if they have the mechanical skill it is enough, but many dentists of great mechanical ability have no influence and command little respect in the community because of their lack of education. The men with mere handicraft occupy a narrow groove in life, and they cannot reach outside of it and take hold of those things which should be grasped by dentists if they are to occupy the position they should as professional men. Are the uneducated dentists the ones of whom we feel proud? Are they the men who raise the standing of our profession in the eyes of the world?

Dr. Garrett Newkirk, Los Angeles: I have wondered at the distinctions so often made between theoretical and practical, and I wish we could get rid of those terms. Everything you teach the student in the way of scientific study—physiology, materia medica, applied science, physics—is not theory, but practice. It is something he needs to know whenever he has use for it, and he will have use for it. It is not manipulative dexterity alone that is practical—his knowledge is practical, and the more he has the better it is for his patients.

Dr. F. B. Noyes, Chicago: I do not think we will ever have

the A.B. degree as a requirement, and I doubt if it would be advisable, but let us not discourage A.B.'s from entering the profession, for certainly they do not make it worse. A man with manly qualities is not hurt by any amount of education; he is less of a man without education than with it.

Dr. H. E. Roberts, Philadelphia: The Pennsylvania Board has never found occasion to reject a man because he had too much education, but I have seen men fail because they had not enough. I am surprised that some members of examining boards seem to think it unnecessary that the students have a four years' course.

Dr. H. B. Tileston, Louisville: As I understood Dr. Foster, he said he would rather receive into his school a young man not equipped with a high preliminary education, but impressed with the necessity of confining himself strictly to study, than one with an A.B. degree, who felt himself superior to the profession which he was entering. I do not think Dr. Foster is opposed to higher preliminary requirements for entrance to our colleges. The fear expressed by him that the state boards would graduate men into the practice of dentistry in spite of the colleges if the preliminary educational requirements were advanced beyond a reasonable limit seems to me to be well founded. This brings up the count system, by which a student would be given credit for his attainments, and if this is ever adopted, as I believe it will be in the near future, the colleges and the boards will not be far apart in their purposes.

Dr. Foster, closing discussion: I would not have anyone think that I place any depreciation whatever on a college man, for I hold that the more education the better the man. We put great stress on the preliminary education, but I emphasized the fact that while this is important there are other things equally so. The great trouble with the men possessing college degrees is that their training has been along literary and not manipulative lines, and they are inclined to think that they have a bettter equipment and can learn dentistry a little easier than those without a degree. In regard to Dr. Brophy's remark that we have twice as much to learn as we did fifteen years ago, I would repeat that we have better facilities for learning now than then. A young man who has the ability to learn dentistry can learn it in three years in a good school, and four years of seven months are a hard strain, financially and otherwise.

Digests.

DIATORIC TOOTH IN BRIDGEWORK. By R. M. Sanger, D.D.S., East Orange, N. J. Read before the Academy of Stomatology, Philadelphia, November 24, 1903. That crown and bridgework has come to stay no one will question, but that it has not reached perfection from either a hygienic or esthetic standpoint is obvious to all of us. To the dentist who is worthy of that name a gold crown on any of the anterior teeth is a source of humiliation, and even the second bicuspid is covered with gold only when there is nothing more feasible. In fact, the bold display of gold crowns is rapidly becoming the sign manual of the dental parlor and the fakir, and I hope and believe that the time is not far dis-

FIG. 1.

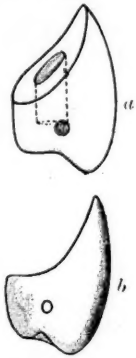
FIG. 2.

tant when the self-respecting public, as well as the self-respecting professional man, recognizing the fact that a display of gold in the mouth is indicative of the parvenu and the shoddy, will cause a demand for some other and more esthetic means of restoring their broken-down teeth to a condition not only of usefulness but of ornamentation. It is true that single crowns for the anterior teeth have reached a high state of perfection, and in the Logan, the Richmond, the Darby and the half-collar crowns we have at our disposal methods of restoring those teeth which are almost ideal, but when perfectly sound anterior teeth are to be used as anchorage piers for bridges the methods at our disposal for utilizing and at the same time preserving those teeth intact are somewhat faulty. The open-faced or window crowns so commonly used for this purpose are not only very unsightly, but in the majority of cases prove to be a delusion and a snare, their early failure usually being accompanied by a woful amount of destruction of tooth-substance, compelling the final loss of the natural crown and the

construction of the pier on entirely different and more radical principles.

Dr. F. L. Marshall of Boston describes his method, which he calls a staple crown, about as follows: With an enamel fissure bur cut grooves in the mesial and distal surfaces of the tooth just back of the contour, as deep as the fissure bur, then connect these grooves across the tooth by the use of an enamel bur, making this groove as deep as the other two. If the articulation is very close, grind off enough to allow for the thickness of the gold. Then knife-edge the tooth from the cross groove to the edge, as you would an artificial tooth before backing. Next select a piece of platino-iridium

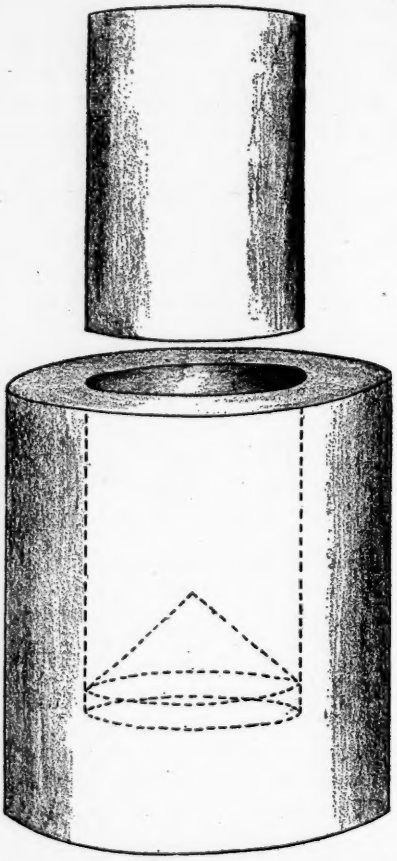
FIG. 3.



or 22-carat gold wire, a trifle smaller than the fissure bur, bend a right angle on the end long enough to fit one approximal groove, take the distance across the tooth between the grooves and bend another right angle in the wire, thus forming the staple (Fig. 1) which gives the crown its name. Cut the ends of the staple the proper length to fit the grooves and allow the cross-section to be flush with the palatine surface of the tooth. A piece of pure gold is selected, a little larger than the crown, and one side of the staple is held against it at right angles with a pair of pliers, and it is caught with a little 22-carat solder. It is then placed in position on the tooth in the mouth and the gold burnished down to fit the lingual portion of the tooth and the approximal surfaces sufficiently anterior to the staple to allow of burnishing. Remove carefully and solder the staple to the crown around its entire length. Now

replace the crown in the mouth and burnish carefully to place, trimming off all unnecessary gold. When a perfect adaptation is obtained, the piece is carefully removed and the outside is over-

FIG. 4.

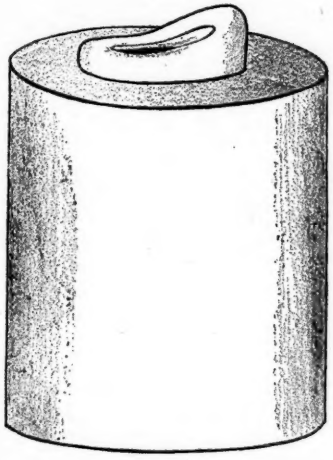


flowed with solder to give rigidity; the entire free edge, however, to about the width of one thirty-second of an inch is kept free from solder to admit of burnishing when the final placing is done and before the cement is hard.

In my own practice I have had frequent recourse to an old

but, because of its more heroic nature, less commonly used method than the above, with much satisfaction both to my patient and myself—that is, the immediate anesthetizing and removal of the pulp and the swaging or burnishing of a piece of gold to the palatine surface of the tooth, passing a platino-iridium pin through it and soldering, giving a pier as shown in Fig. 2, *a* and *b*. This admits of the covering of the minimum amount of tooth-substance with gold and at the same time gives the maximum strength to the pier. If an adjustable bridge is to be made a platinum tube is

FIG. 5.



used in place of the pin, and the pin, which is attached to the bridge, telescopes into the tube. In the earlier days the necessity for the administration of a general anesthetic (gas in my practice) for the immediate removal of the pulp painlessly was ofttimes a serious objection to the patient and to some operators, but with the introduction of cocain and adrenalin chlorid the painless removal of the pulp by pressure anesthesia has become such an easy and certain operation that I do not hesitate to do it whenever indicated, believing that the subsequent results fully warrant a procedure which at first glance may seem very radical.

Next to the unsightly piers of your bridges are the solid gold cusps of the bicuspid and molar dummies, and it was to a method

of overcoming this difficulty that I wished especially to call attention. By the use of the diatoric tooth instead of porcelain facings you can construct a bridge which is more esthetic in appearance, simpler in construction, has greater strength, and is more readily repaired in case of fracture. Using a bicuspid diatoric tooth for purposes of illustration, the procedure is as follows: The teeth are carefully selected to fit the case with as little grinding as may be necessary. The form in which they are made, with a long curve on the inner surface (Fig. 3, *a* and *b*), permits the cervico-lingual surface to fit the curve of the average ridge with little or no grinding, but if any grinding is necessary, it should be done on the base of the tooth rather than on the morsal surface. A piece of pure gold plate about 32 gauge is cut to a size sufficient to cover the base of the tooth and project over the sides about one-eighth

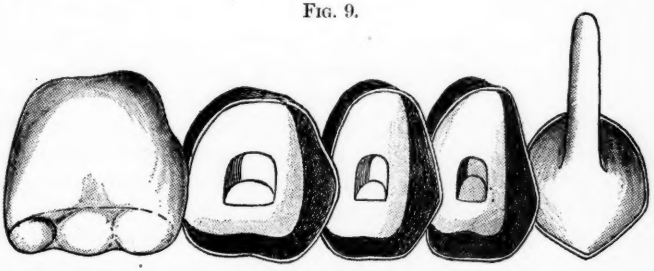
FIG. 6. FIG. 7. FIG. 8

of an inch. This is laid on the base of the tooth and burnished to fit as nearly as possible, the edges being turned up all around to form a cup-like shape. A metal ring which will fit in a crown swager of the style shown in Fig. 4 is filled with hot modelling composition and the morsal surface of the diatoric tooth is pressed into it to a sufficient depth to hold it firmly (Fig. 5), and the whole plunged into cold water to harden the composition. (I procured my metal rings by cutting a small bicycle pump in sections.) With the piece of gold in position on the embedded tooth they are placed in the swager and covered with cornmeal or some equally yielding substance, and swaged down until the gold cup fits the tooth accurately. Upon removal the gold is trimmed to the desired height around the edges, always allowing it to extend well up to the little holes on the approximal sides of the tooth, and then with a ball burnisher it is burnished into the central depression in the base of the tooth. The gold will be perforated when burnishing it into this hole, but the burnishing should be continued until the metal accu-

rately fits the margins. It is then filled about one-third full with gold-foil, or a coil of pure gold plate is placed in the cavity and burnished to fit. The gold cup is then removed from the tooth and the balance of the hole is filled with 20-carat solder until it is flush. This gives you a gold cup and pin which closely fits the diatoric tooth, holding it so firmly that it would almost keep its place without cementing. Fig. 6 gives a side view of the cup and pin, Fig. 7 gives a front view of the same, and Fig. 8 shows the tooth in position in the gold cup.

With the teeth in the cups, but not fastened, they are assembled on the cast and waxed to each other and to the piers on the lingual side. The assembled piece is then carefully placed in the mouth, and any error in the occlusion is corrected by allowing the patient

FIG. 9.



to bite the teeth to place. The diatoric teeth are then removed from the cups, and the piers and cups are taken from the mouth in an impression of terraplastica or some suitable investing material. This gives you the pieces invested and ready to solder at the approximal surfaces. For additional strength a piece of gold plate is laid across the lingual aspect from pier to pier and the whole overflowed with solder. When this is done the work is allowed to cool slightly, and it is then plunged into cold water, which disintegrates the investing material and allows the work to come away clean and without injury to the fine edges. The polishing should be done with the porcelain teeth in position to prevent possible injury to the fine edges of the gold cups, but they should not be fastened permanently in the cups until everything is completed and ready for the mouth, thus avoiding dirty joints. Fig. 9 shows the work ready for the final cementing of the diatoric dummies. The teeth may be permanently fastened in the cups with oxyphosphate

of zinc, gutta-percha, or by the use of powdered sulphur, after the manner of attaching English tube-teeth to gold plates. In case of the fracture of one of these dummies the repair can be quickly and easily done in the mouth, as the diatoric teeth are readily duplicated, but the danger of fracture is very remote, as the porcelain is at no time subjected to heat, and you have the full thickness of the tooth incased in gold to withstand the force of mastication. As I intimated, this method gives you a maximum degree of strength, a minimum display of gold, and an occlusion which is well-nigh perfect, and I am sure that the esthetic appearance of a bridge constructed in this way will appeal to you all.—*International.*

RESTORING INCISAL CORNERS WITH PORCELAIN. By L. M. Homburger, D.D.S., New York. Read before the New York State First District Dental Society, October 13, 1903. The method I have adopted in restoring the corner of an incisor tooth with a porcelain inlay will withstand an enormous amount of stress, and if done neatly will remain longer than any other method I have ever seen. We will call Fig. 1 a central incisor, from which a corner has been broken. After thoroughly preparing the cavity I take a small bur and drill a hole at the cervical end (Fig. 1, *b*) and at the incisal edge (Fig. 1, *a*) large enough to accommodate an iridio-platinum wire, No. 24 standard gauge. I cement that wire into place (Fig. 2, *c*) and bring the cement up under the wire, filling the space between the wire and the tooth fully, at the same time avoiding any undercuts, so that the sides are absolutely parallel. When the cement is thoroughly set I take a piece of platinum 1-1,000 of an inch thick or No. 30 gold foil, depending upon whether high-fusing or low-fusing body is to be used. I burnish this into the cavity, bringing it over the cement and wire; the finished matrix then has a small teat in the center, instead of a depression as is usually the case for ordinary cavities; in other words, there is a depression the other way, which fits over the cement and the wire (Fig. 3, *c*). I then build up the porcelain inlay filling in the usual way upon this matrix, and after it is thoroughly built up and I have tried it in, I peel off the platinum and have then an inlay which of course has a depression in the center like *d*, Fig. 4.

I next put an old inverted-cone bur in the engine, and revolve it on a carborundum stone in order to remove the blades and get a

blank; this I also keep for future cases. I then fill the depression in the inlay with carborine—a mixture of ground carborundum and glycerin. I now undercut the depression in the inlay by means of my inverted-cone blank revolving in the carborine.

The inlay is now imbedded face down in wax and the glaze etched off the back with hydrofluoric acid. The next procedure is to remove the cement from under the platino-iridium wire, being careful to leave enough cement at the points *a* and *b* to hold the wire firmly in place. The tooth then presents itself with a loop of wire in the center. The tooth and the inlay are both thoroughly dried, and the inlay is cemented to place with oxyphosphate cement (Fig. 5). You will see that this must hold with a great amount of tenacity. The cement is forced into a space which has a marked undercut; it is also forced around the wire loop, which holds as your hand does around a jug-handle; besides, the cement adheres to

FIG. 1. FIG. 2. FIG. 3. FIG. 4. FIG. 5.

both the dentin and to the etched surface of the porcelain, and it must needs be very strong.

Whenever you bake platinum or iridio-platinum in the porcelain you weaken it considerably, whereas if you have the cement inside you strengthen the porcelain, because the cement will hold it at all points and prevent it from fracturing. For this reason this form of inlay has marked advantages over any with pins and loops baked in the porcelain, and has proved very satisfactory in my practice.

Discussion. *Dr. W. D. Tracy:* I would ask Dr. Homburger if the area near the incisal edge would not be weakened after a hole had been drilled in the tooth sufficiently large to accommodate the wire. In my experience the enamel chips away at this point (point *a*) or the porcelain itself is fractured. We cannot deny the fact that the structure of the tooth is weakened there, and that a shock at the proper angle would reduce it to a powder.

Dr. Homburger: On my diagram I marked the point *a* too far down. I put it as far away from the incisal edge as possible without

endangering the life of the pulp and I always drill this hole absolutely parallel with the cutting edge of the tooth. I never use wire larger than No. 24 standard American gauge. The larger the hole the more you weaken the tooth.

Dr. Tracy: I think the loop scheme is very ingenious, but I have always felt that in thin, narrow teeth which taper down to a knife-edge at the incisal portion it would be a very treacherous arrangement to have a hole between the internal and external enamel plates, and that the tooth would be weakened. I hope the doctor will have no failures there, but I prophesy that he will if he uses the method as illustrated on the board.

Dr. F. L. Fossume: I wonder how such teeth hold gold so well, considering that the tooth has to be cut out a great deal more than for a small pin. If they are to be restored by a filling I believe porcelain will support the edge better than anything else on account of the cement binding it and the tooth together.

Dr. Homburger: A porcelain tip inserted in that way is stronger than a gold filling, because the malleting would be apt to fracture or weaken the tooth. You have not only the strength of the oxyphosphate filling in the middle, but also the oxyphosphate around the enamel which sustains it. In a gold filling the gold is condensed into the retaining pits, whereas by this method the wire is cemented into them, which instead of weakening the tooth strengthens it.—*Cosmos.*

RELATION BETWEEN ORTHODONTIA AND PROSTHODONTIA. By Frederick A. Peeso, D.D.S., Philadelphia. Read before the American Society of Orthodontists, at Buffalo, December, 1903. Every one who has made a careful study of these subjects must be thoroughly convinced of the intimate relation which exists between orthodontia and prosthodontia. Not every one, however, has made such a study of the problems which these important departments of our art present, hence it very frequently happens that the specialist in either department keeps his mind so intently fixed upon the details comprised in his own field of work that he loses sight of the important relations which all departments of dentistry bear to each other. Orthodontia, as shown by Angle, is the science of normal occlusion. The problems which it presents for solution to the practical dentist are those of the restoration of

normal occlusion. Precisely the same problems are those which are presented to the prosthodontist for solution, albeit his work is complicated by the factor of restoration of lost structure in addition to the problem of occlusion.

It often happens that the services of the specialist in one of these branches will be of no real benefit to the patient without the assistance of the other. In many cases where bridgework is indicated it would be of little or no value unless the teeth were first brought into their proper position in the arch. On the other hand, where the services of the orthodontist have been employed the benefit would be but temporary without some permanent appliance to retain the teeth in position and restore the lost organs of mastication. In some instances a partial plate might be indicated, but in the great majority of cases a well made and perfectly articulated piece of bridgework constitutes the best substitute for the lost organs.

Fixed versus removable bridgework. If it be decided that bridgework is best adapted to meet the requirements of a given case, it is well perhaps to discuss at this point the relative value of fixed and removable work. It is unquestionable that if a removable appliance could be constructed which, when in position, is held rigidly in place, will resist wear and can be readily detached, it would be preferable to one which was permanently fixed. Such attachments can be made, which after years of use will show practically no wear at all and will be held as tightly in place as when first put in the mouth. This, too, where the piece is removed at least once every day and often many more times, but in making attachments of this kind there must be the greatest accuracy or the piece will be worthless. There is hardly a case where fixed bridgework is used that removable would not answer as well or be very much better.

Of the many advantages which removable bridgework possesses over fixed work, the first to be named is its hygienic properties. No one can deny that a bridge which can be removed from the mouth, cleansed and sterilized in boiling water, if desirable, is far more cleanly and far less liable to become foul than one which is permanently fixed and can be cleansed only in the mouth. In many cases where fixed bridges are worn the mouth becomes so foul and the breath so offensive as to be almost unbearable, even when the best of care is given them. Another point in favor of removable

work is the facility with which it can be repaired in case of accident, and also the ease with which the adjoining teeth can be reached in case of decay or accident. Anyone who has undertaken to insert a gold filling in the approximal surface of a tooth adjoining the abutment of a fixed bridge can appreciate the difficulties of such an operation. It is necessary to get a much greater separation than where no bridge is worn, as the rubber dam cannot be put on over a fixed piece. If the bridge be removable it has simply to be lifted off, the dam adjusted and there will be ample room to prepare the cavity and insert the filling without further separation, or if the anchorage be such that there will be no separation on the removal of the piece, the separation can be easily made after the bridge is off and the dam will include the abutment. Another advantage is that in case of any pathological conditions of the mouth arising which might make it desirable to have the piece out of the mouth

Fig. 1.

for a time, if it is a fixed bridge it will be necessary to cut and mutilate it in removing so as perhaps to destroy it, while a removable bridge can be detached almost in an instant. Last but not least in importance is the fact that the making of removable bridgework is conducive to finer workmanship, as it requires far more skill than does fixed work. A great deal of fixed bridgework is put in the mouth finished or unfinished in a manner which it would not be if it were possible for the patient or for another dentist to remove the piece for inspection.

The only objection that can possibly be made to bridgework in cases of this kind is that for either a fixed or removable bridge it is generally necessary to devitalize at least one of the teeth which are to serve as abutments. It is not my intention to enter into any discussion as to whether or not it is good practice to sacrifice a living pulp in order to anchor a bridge, but an experience of fifteen years seems to show that a devitalized tooth will give as good support and stand the strain as well as one in which the pulp is alive.

Bicuspid abutment. One of the cases most commonly met with

is that in which the lower first molar or first molar and second bicuspid have been lost, with the inevitable result of the tilting forward of the second molar, partially closing the space, and not only destroying the articulation of the teeth immediately involved, but frequently changing it all around the arch (Fig. 1). Of course this space can be filled by crowning the molar and exaggerating the contour so as to bring it in contact with the bicuspid, or by swinging a dummy to the crown. This might prevent further change, but the great mischief has already been done and wherever it is practicable the patient should be referred to the orthodontist whose services are here clearly indicated; but it is useless to think of restoring these teeth to their normal position and correcting the articulation unless there is to be some appliance made which will permanently retain them in their places, otherwise there will be a quick return to the abnormal condition.

Fig. 2.

There are several different styles of abutments, any one of which may be indicated according to existing conditions, and also different ways of making the bridge for a case of this kind. As a general thing it is necessary to devitalize but one tooth when there is but a short space to be filled in, and that is the one which is to serve as the principal abutment. Which tooth this shall be depends upon the condition of the two supports and the particular kind of a bridge that is to be used. If the bicuspid is somewhat decayed and broken down it is generally well to make it the principal abutment. The tooth should be devitalized, the canal somewhat enlarged and the apex filled. In the mouth of a lady, or of a gentleman where a gold crown would be at all conspicuous, it is best to cut the tooth down nearly to the gum line and prepare the root in the same manner as for a Richmond crown, by entirely removing the enamel and leaving the root so that its greatest diameter is about one-sixteenth of an inch under the gum. A band of No. 30 gauge coin gold is fitted to it, carefully festooning to follow the margin of the gum, after which the end of the root is cut down to a point just below the

gum on the buccal side, but leaving it about one-sixteenth of an inch above it on the lingual side (Fig. 2). The band is now replaced and marked around the inside close to the edge of the root with a sharp instrument. The canal is then enlarged to the size of the tube which is to be used. If a gold bridge is to be made the reamer should be leaned toward the lingual side, thus sloping the enlarged canal in that direction, so that when the tube passes through the floor there will be ample room on the buccal side for the facing. If there is sufficient depth to allow of using a porcelain bridge it is enlarged on the line with the canal. The tube is then placed in the canal and a plaster impression just large enough to keep the relation of the band and tube is taken.

A small model is then made, the inside of the band and the outside of the tube having first been given a very thin coating of wax to facilitate their removal from the cast. The band is now cut off to

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

the line and flush with the end of the root, filed so that it is perfectly flat, and a floor of No. 28 gauge coin gold sweated or soldered to it. A hole is next made in the floor and the tube waxed and soldered the same as the pin in a Richmond cap, after which the open end extending above the floor is cut off and the cap finished and polished (Fig. 3).

The removable part of the abutment is made as follows: The pin of half round iridio-platinum or of platinized gold wire is bent double, the ends just caught with a little pure or coin gold, and filed or turned to exactly fit the tube in the cap (Fig. 4). A floor of No. 28 gold coin, or of iridio-platinum if the piece is to be of porcelain, is then drilled so that the pin will fit tightly, and waxed in place, removed, invested and soldered (Fig. 5). After cleaning in acid it is replaced on the lower cap, trimmed even with the sides all around, and a half band of No. 28 coin gold or iridio-platinum fitted to the lingual side, reaching only to the gum line, and toward the buccal side to a point about where the facing will reach, when

it is waxed, removed and soldered (Fig. 6). The inner cap is then placed on the root and is ready for the impression and articulation.

If the attachment has been accurately made and fitted, it will not be necessary to devitalize and crown the molar. This minor support can be prepared in the following manner: a cavity is made in the mesial side of the crown of the molar, extending back about half the length of the occlusal surface (Figs. 7-8), and a hard gold filling inserted. It must be very thoroughly condensed and preferably made of No. 60 rolled gold, as this makes a denser filling. A groove is then cut in the filling and is countersunk at the distal end far enough from the mesial so that there will be no possibility of its giving way under the stress of mastication (Fig. 9). If the upper teeth have elongated they should be ground away to the normal line and carved so as to represent the natural cusps and preserve the inclined planes. The articulation should be taken in plaster-of-Paris, as in this way only can the correct occlusion be gotten. If

Fig. 7.

Fig. 8.

Fig. 9.

a saddle is to be used it should be struck up and connected with the abutments before the articulation is taken (Fig. 10). The model is then prepared and the bridge made and finished (Fig. 11). It is best to put an orange-wood stick or something between the abutments to keep the space from closing up while the bridge is being made, as sometimes the teeth will move very rapidly. The spur can be made of round iridio-platinum or platinized gold wire of No. 14 to 16 gauge. A bridge of this kind is very strong, the spur resting in the gold filling in the molar getting the full support of that tooth, and the hook overcoming the possibility of the teeth spreading, while the split pin and the half band hold the piece rigidly in place. If it is to be a porcelain bridge a very thin piece of mica should be placed between the halves of the pin to prevent their being soldered together while the piece is being fired.

Molar abutment. Where the molar is to be the principal abutment the attachment is made differently from the bicuspid. A simple telescope crown will not answer where there is to be but one principal attachment to a bridge unless the crown be very

long, which is seldom the case; but if there are two principal abutments they will do the work satisfactorily. There are several different styles of abutments which can be used, but only two will be described, one where the tooth is ground away for a cap and the other where the natural crown of the tooth is preserved. The first of these is the combination of the telescope crown with the tube and split pin and forms one of the best of abutments for cases of this kind. The tooth is devitalized and prepared as for a full gold crown, being cut low enough to allow of placing a good thick cusp. The band is then made so that its sides are exactly parallel, or very slightly larger at the neck, fitted to the tooth, going about one-sixteenth of an inch below the gum, and marked around the inside even with the top of the stump. A tube of suitable size is used, resting it on the floor of the pulp chamber, or if this is very shallow one of the canals can be enlarged for a little distance, and the tube ad-

Fig. 10.

Fig. 11.

justed in place so that it is exactly parallel with the sides of the band (Fig. 12). An impression is now taken to preserve their proper relation, the band and tube waxed in the same way as described in the bicuspid attachment, and the model made from hard plaster. After it has been separated the band and tube are heated slightly and removed. The band is then cut off even with the top of the stump, filed perfectly flat and a floor of No. 28 coin gold sweated to it, after which the tube is fitted and soldered and the cap finished as in the case of the bicuspid. The whole inside of the band is then given a very thin coating of wax and filled with fusible metal. The outer band is made a little small and driven over the reinforced inner cap to within about one-sixteenth of an inch from its lower edge, so that it will reach only to the gum line and not go below it (Fig. 13). It is then cut off and filed flush with the inner cap and the floor sweated to it. The contour is now put on and the split pin soldered in place, letting it extend a little above the floor so that it may be firmly attached to the cusp. After the cusp has been selected the under surface is filed perfectly flat

and soldered to the cap, a hole having first been cut in it to receive the head of the pin. After it is finished and polished it presents the appearance of an ordinary contoured full gold crown (Fig. 14). The bicuspid is prepared in the same way as the molar previously described, the filling being inserted in the distal side to allow of having a good thickness of gold between the spur and the tooth structure, grooved and countersunk, after which the inner cap of the molar is put in position, the articulation taken in plaster and the bridge made as in the previous case.

Inlay abutment. The other attachment, to which the writer has given the name of "Inlay Abutment," is as follows: The molar is devitalized and cut out on the occlusal surface about one-half the length of the crown and down on the mesial side to allow for a heavy round bar of about No. 13 gauge and a good thickness of

Fig. 12.

Fig. 13.

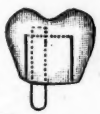


Fig. 14.

gold (Figs. 15-16). The pulp chamber is filled with gutta-percha and the cavity shaped about as in Fig. 15, leaving the sides curved and non-retentive. Pure gold of No. 34 or 35 gauge is then burnished into it as for an inlay, care being used to have the margins perfect. A hole is then made near the distal end of the matrix and through the gutta-percha to the floor of the pulp chamber, and in it is placed an iridio-platinum tube large enough to take a No. 13 or No. 14 wire pin. Wax is packed tightly in the matrix and around the tube. It is then removed and after placing a piece of pure gold across the front so that it can be entirely filled to that point, it is invested and filled with coin gold, thus making a perfect gold inlay with a tube extending through it (Fig. 17). A groove is now cut from the tube to the mesial end of the inlay. The bulk of the cutting can be quickly done with a thin, round-edged carborundum wheel (Fig. 18), and finished with a fissure bur of the same size (Fig. 18) or slightly larger than the inside diameter of the tube. A flame-shaped finishing bur can be used to round the

corner at the entrance to the tube and to give a slight downward slant to the mesial end, so that the bar will not come above the cusp of the dummy. Fig. 19 shows a section of the inlay and tube in position in the tooth with the bar and pin in place. The bar and pin are made of half round iridio-platinum or platinized gold wire, bent double and soldered to within about a quarter of an inch from the end and filed or turned to exactly fit the tube and groove. It is then bent so that it will lie in the groove closely and the closed end filed so that the pin can be slightly opened, giving it a spring which will hold the piece firmly in place. The bicuspid is prepared with the grooved and countersunk filling. The inlay with the pin in position is then placed in the tooth and the articulation taken in plaster, the inlay coming away in the impression. The model is then prepared and the bridge made, the bar being soldered solidly into it (Fig. 20). When it is finished the sides of the inlay are roughened or grooved slightly and it is connected with the bridge

Fig. 15.

Fig. 16.

Fig. 17

Fig. 18.

and cemented as though it were a fixed piece. This attachment has been employed with great satisfaction for a number of years in molars and in a few instances in bicuspids, but good judgment must be used, as the bicuspid is a much weaker tooth than the molar. It has also been used for a long time in a modified form for gold crown abutments with unvarying success.

Cuspid abutment. In cases where the bicuspids have been lost the writer has for many years made use of the split pin and tube, with a hooked spur resting in a filling in the molar. The cuspid is devitalized and the canal enlarged to the size of the tube to be used. The split pin is made and bent in the desired form, and with the tube is placed in position in the tooth, the impression and bite taken and the bridge constructed. When it is completed a little wax is put around the pin at the entrance of the tube to prevent any cement from working into it and the piece is cemented. When the cement has hardened the bridge is removed, the rubber dam adjusted, and after a little of the cement has been cut away from around the end of the tube a tightly fitting polished steel mandrel is

inserted and a gold filling packed tightly into the cavity around the pin and over the end of the tube, thus perfectly sealing it in, so that there is no possibility of the cement washing away. The pin is then removed and the filling finished and polished. This makes a serviceable attachment and has also been used many times in restoring upper central or lateral incisors which have been lost, and even when all of the incisors have been gone, by using both of the cuspids. When one of the centrals is missing the tube can be placed in the remaining central and the hooked spur in a gold filling in the lateral, just at the basilar ridge. When a central and lateral are lost the tube is put in the cuspid, and the spur in a filling in the remaining central. It also forms an excellent support where the first bicuspid and lateral incisor are gone, the cuspid being tubed and spurs from the dummies resting in the central incisor and second bicuspid. The advantage of the hooked spur

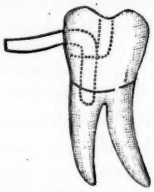


Fig. 19.

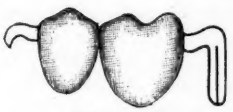


Fig. 20.

is that it prevents the teeth from spreading, at the same time giving a strong support and also affording a slight natural movement to the teeth, which is desirable.—*Items.*

DENTISTS AND PHYSICIANS. In the *Medical News* of January 3, 1904, there appeared under the above caption an editorial so intelligently appreciative of the importance to the community of skilled, scientific dentistry, and urging with so much cogency the duty of physicians to sustain the ethical practitioner as against the "bargain-counter" fakir, that for the benefit of our readers the article is herewith reproduced in its entirety.

"Now that the conditions of the practice of medicine have improved to such an extent as to eliminate many of the evils of a former time, it is important also that the practice of dentistry on the highest ethical lines, as a significant department of medicine, should be encouraged by the physician. In recent years the possibilities of even serious gastro-intestinal disturbance as a consequence of bad teeth have come to be generally accepted by conserva-

tive medical men. It is not alone that the teeth are an important digestive organ, quite as indispensable for the preparation of food as the stomach itself, but also the presence of carious teeth furnishes a very favorable culture medium in the mouth on which large numbers of bacteria are constantly multiplying and being carried down into the lower digestive tract, where they may work very serious harm. Whether the contention that this may even cause pernicious anemia be true or not there is no doubt of the possibilities for evil it involves.

"All of us have had the experience of discovering that an obstinate case of indigestion, which resisted all ordinary medical treatment, yielded promptly when the patient was provided once more with a proper mastication apparatus and the food was duly prepared for the stomach's action. On the other hand, very few physicians have failed to have the unfortunate experience, after advising patients to consult a dentist, to find in a very short time that the work done within the mouth was not of a kind to give any fair promise of lasting benefit. Dentists either incapable or so hurried that they do not do justice to their patients often make matters worse after slight temporary improvement, to the utter discouragement of the dyspeptic patient, already sufficiently downcast as a result of his stomachic condition.

"At the present time, in the large cities of this country particularly, advertising dentists who offer bargains in dentistry are so common and their notices so prominent that many people, if simply advised to go to a dentist, without any further directions in the matter, will be almost sure to consult one of these advertisers. As might be expected under the circumstances, the work is botched, for advertising is costly; inexperienced assistants are employed; the operators being very often young and comparatively untried dentists—recent graduates who have not as yet had opportunities that enabled them to judge how teeth should be treated. The consequence is that not infrequently too large fillings are inserted after the destruction of portions of the teeth that need not have been sacrificed, and these fillings are inserted with such lack of skill that within a few months, at most a year or two, the teeth, in worse conditions than ever, require to be cared for once more.

"No physician at the present time should ever treat a patient complaining of symptoms of indigestion without a thorough examination of the teeth. If the teeth present are insufficient for proper mastication, or if there are carious teeth, the patient should at once be recommended to consult a good dentist. It is not, however, sufficient simply to suggest any dentist, but the patient should be given a good idea of the risk involved in consulting any one but some member of the dental profession who is thoroughly responsible and whose skill can be relied upon to do what is best for the patient. There is no doubt that physicians can in this way contribute in an important degree to the uplifting of the sister profession of dentistry and enable it to escape some of the demoralization incident to the large number of bargain-counter dentists in the field."

The fact has long been recognized that the gross commercialism

and professional indecency of the methods pursued by some who disgrace the name of dentist in almost every large community are a serious and increasing menace to the well-being and good repute of the whole professional body. Unfortunately, the man who seeks to gain an advantage over his fellow-practitioners by newspaper and show-bill advertising, glaring signboards, ghastly show-cases, "steerers" and kindred devices is quite within his rights under the law. Such acts are not and cannot be made statutory offences.

All that can be done is to make the community understand that such practices are professionally odious; not because they deprive the reputable practitioner of patients, but because they establish a misleading and ignoble standard of professional repute. The only sound and legitimate basis for professional success in a community is not noisy self-laudation by the practitioner, but the quiet appreciation and praise of those whom he has served. If advertising methods were to be legitimatized and resorted to by everybody, success would largely depend upon the ability to pay for newspaper space and typographical display, and would become increasingly difficult for the man of modest merit and restricted means, but increasingly easy for those whose bid for favor is boastful mendacity and a well-filled purse.

Not only is it opposed to sound professional policy to allow such a standard to be instituted and maintained, but it is opposed to the true interests of the people at large, who by this time should have learned that it is advisable to judge of a man's merit not by what he affirms of himself, but by what is affirmed of him by others who have practically tested his fitness and ability for the duties he assumes to perform.

This is the true basis of the ethical interdiction of advertising practices by the dental and medical professions, and the community should recognize the fact that the man who for his own selfish purposes violates the reasonable ethical regulations which have been established for the governance of the professional body, and is thus false to his professional obligations and false to his fellow-practitioners, cannot be trusted to deal honorably with those who are so misled as to place themselves under his professional care.

Physicians who are rigidly insistent upon the observance of ethical rules by the members of their own profession cannot consistently be tolerant of the dental quack and advertiser, and by bringing to

bear against him all the strength of their influence with their individual patients and with the community at large, upholding the regular practitioner and discountenancing the charlatan, they can become most helpful allies in the battle decent dentistry is waging against the massed forces of quackery and commercialism.—Editorial in *Brief.*

RELATION OF ODONTOLOGY TO OPHTHALMOLOGY AND OTOLOGY. By Frank Allport, M.D., Chicago. Read before the Chicago Dental Society. It surely requires no stretch of imagination to assume a distinct connection between ophthalmology, otology and odontology. No portion of the body is a kingdom in itself and independent of other portions. Cardiac affections may permeate every nook and cranny of the human organism, and the same may be said of hepatic, spinal, uterine and other diseases having their principal pathological centers in some peculiar section of the body. No argument is necessary to convince you and me that diseases of the teeth and mouth may produce pathological changes in the organs of sight and hearing, and possibly vice versa. We know it because we have seen it over and over again, and an article on this subject is only valuable as an effort to emphasize and reiterate well known facts and to crystallize them into definite and tangible form, for although these clinical data stand undisputed, it is much to be regretted that ophthalmologists and otologists are prone to carelessly neglect the prolific etiological influence of the mouth.

Diseases of the mouth may produce pathological changes in the eye or ear by one of two channels: by direct continuity of tissue or by reflex irritation. We must not, however, lose sight of the fact that many diseases whose underlying cause has been ascribed to an elusive reflex phenomenon have been shown to have their origin in an actual migration of infective microorganisms along the fibers of nerve tissue. Neither should we allow the pendulum to swing too far the other way in this age of doubt and materialism, to the elimination of *all* reflex pathological conditions, for it surely is difficult to harmonize the theory of septic infection with prompt disappearance of subjective and objective phenomena upon removal of the offending cause, such, for instance, as a tooth. As illustrating the point, Milliken reports a case of a healthy man who con-

tracted two attacks of iritis, the first came on with the cutting of a third molar and disappeared upon the subsidence of the gum inflammation. The second came on after losing a filling in the third molar upon the same side as the eye, and was immediately relieved after the tooth was excavated, sterilized and filled. There was no apparent septic invasion of the iris, and the prompt disappearance of inflammation upon the removal of the irritating cause would seem to argue against the theory of septic migration. As a still clearer instance of the actuality of reflex influence, Neuschuler of Turin reported a case of a man who noticed that after prolonged use of the eyes he suffered from an intense pain in the orbit which would invariably finally spread to the teeth and become so severe as to necessitate cessation from eye service; a correction of his refractive error by glasses relieved all his symptoms. Foucher of Montreal reports a case of a man fifty years of age, who had a decayed, aching and broken molar tooth. He developed a keratoscleritis and conjunctivitis, together with hepatic eruptions on the cornea and a little above the eyebrow along the sensitive branches of the ascending frontal nerve. The tooth was extracted and permanent relief was speedily obtained. Foucher also reports another case of a girl aged twenty-one years, who had an irritable third molar, accompanied by great pain in the eye and optic neuritis, with total suppression of vision. The tooth was extracted and a speedy cure followed. Samuel Theobald of Baltimore reports a case of a man aged twenty-six years, who contracted a suppurative inflammation about the root of the left upper lateral incisor, the pulp of which had been previously destroyed by a dentist. The tooth was decayed but not painful. The pupil of the left eye became dilated and paralysis of accommodation occurred. The tooth was extracted and a cure of the ocular affection speedily followed. Theobald also reports a very remarkable history of a man of thirty-five years of age, the crown of whose right upper lateral incisor became broken off, followed by inflammation around the root and alveolar process. Both pupils speedily became immobile and paralysis of accommodation occurred, together with retraction of the lids of the right eye. His taste was impaired. The tooth was extracted and the morbid conditions improved, but a cure was delayed from time to time by root and alveolar inflammation of other teeth. Each time a tooth was extracted the ocular conditions improved, but fresh

exacerbations occurred as the inflammation was continued from one tooth to the other. A cure was not accomplished until all the diseased teeth had been extracted. It certainly appears as if in this last case of Theobald's at least we may feel we have had a striking example of reflex ocular disease due to persistent irritation of a branch of the fifth nerve. The theory of cell migration hardly seems possible with a history of such frequently recurring ocular explosions, accompanied by complete cure upon a removal of the etiological factor. Sewell claims to have seen a cataract developing after extracting a tooth, although one case of this nature hardly seems sufficient for the predication of an opinion. Neuschueller reports a case of incorrect balance of the ocular muscles which appeared to act as an etiological factor for a toothache, as the latter was cured by a correction of the muscular anomaly by prisms. Knies claims to have occasionally cured nictitation by the removal of a painful tooth, and Gasselin makes similar claims concerning supraorbital neuralgia. Amblyopia and amaurosis are frequently reported as caused by irritable teeth by Lardier, Gill, Metras, Samelsohn, Keyser and others, and Knies observes that when the symptoms appear without any other visible lesion the connection may be granted. The majority of dental reflex disturbances of an ocular nature, however, seem to be those of diminished or suspended accommodation and Schmidt has noticed seventy-three cases of weakened accommodation out of ninety-two recorded cases of ocular disturbance with dental etiology, and claims that such reflex phenomena are especially frequent in young people. It is indeed a matter of common observation that many of the eye and ear diseases of infancy and childhood, notably phlyctenular keratitis and conjunctivitis and acute otitis, are apparently caused by teething and defective teeth, accentuated by the frequent entire absence of parental supervision over the mouth and first teeth of growing children. Who shall gainsay the theory that one great reason why children are so prone to eye and ear affections is not only the occurrence of exanthematous and children's diseases, but also the presence of the physiological and pathological condition to which reference has just been made? It might indeed be difficult to prove that the discouraging and prolonged interstitial keratitis so often accompanying the pegged, softened, serrated and sensitive teeth of Hutchinson is dependent entirely upon the underlying syphilitic taint. I think it is

not at all impossible that an etiological factor might also be found in the characteristically diseased teeth almost if not invariably present in these cases, and one reason why interstitial keratitis of this nature is so stubborn and prolonged in its clinical history may be found in the equally and coincidently stubborn and prolonged morbid condition of the teeth. Schmidt is of the opinion that many morbid ocular conditions of dental origin are dependent upon a nervous relaxation of the ocular blood-vessel walls, thus allowing an abnormal amount of blood to remain in the eye, and producing various paretic and other conditions, such as sluggish pupils, loss and spasm of accommodation, congestion of the retina, uveal tract, optic nerve, and even glaucoma, etc. Kniess thinks that when loss of accommodation occurs during a toothache it probably results simply from the lack of vigorous innervation due to intense suffering. He also thinks that muscular insufficiency and diplopia, which are occasionally observed, may also be explained as paresis due to enfeebled innervation, a theory which can be readily understood as easily and rationally explaining at least some of the clinical phenomena.

We have all seen a severe toothache produce neuralgia, redness of the eye and excessive weeping, but we must not be too quick to conclude the tooth to be an etiological factor, not indeed until the neuralgia and ocular conditions promptly disappear upon a cure of the dental disease. The outlines of cause and effect, however, are sometimes beautifully demonstrated, as in a case cited by Hutchinson, who observed a marked case of lagophthalmus from spasm of the levator palpebræ superioris, which promptly disappeared upon the removal of an aching tooth, and Vossius mentions cases of exophthalmos developing from serious infiltration of the orbital tissue, which disappeared rapidly after extracting a diseased tooth. Instances of this nature have also been observed by Burnett in 1885 and Pagenstetcher in 1884, and Dimmer in 1883 claims to have seen metastatic choroiditis produced by the reflex irritation of extracting a tooth. Again referring to Kniess, he notes that pain in the upper teeth on the same side as the affected eye is a frequent symptom of the so-called ciliary pains of keratitis, but particularly of iritis and cyclitis. Less frequently is there pain in the teeth of the lower jaw on the same side, and still less frequently in those of the other side; these are cases of irradiation of pain to adjacent nerve twigs.

Neuralgic toothache may be the prodromal sign of glaucoma. It must not be forgotten that the same general nervous supply extends both to the teeth and the eye, not only through the medium of the fifth pair of nerves, but also through the sympathetic system, and it is therefore not difficult to see how amblyopia, amaurosis, iritis, keratitis, conjunctivitis, strabismus, cycloplegia, etc., may be produced by diseased teeth of the upper and even of the lower jaw, and also by poorly and improperly adjusted sets of artificial teeth, and malposition of the third molars.

While diseases of the ear of reflex origin dependent upon mouth diseases are not so clearly defined and recognized as ocular abnormalities, still they constitute a potential factor in aural histories, and must never be eliminated by one who makes a careful examination of his cases, for it is possible from time to time to find in the mouth the neglected and possibly unsuspected cause of some aural disease. I have used the word "unsuspected," but would not have it interpreted in its broadest sense, as I am personally exceedingly skeptical of the probable existence of an absolutely quiescent etiological condition. I regard it as very improbable that a diseased mouth will cause reflex or eye disturbances without the existence of some palpable morbid aural condition manifested both subjectively to the patient and objectively to the physician. This, to my mind, is the cheerful side of the otherwise mysterious and unfathomable history of reflex power. Without this probability the position of the careful diagnostician must be oftentimes well nigh hopeless, and attended with a helpless groping about in the Egyptian darkness of hidden and unknowable reflex pathology. In other words, if a diseased tooth is producing reflex eye or ear disturbances I believe it will ache, sometimes more, sometimes less, sometimes practically quiescent, but ache, and that a careful examination of the patient will disclose this fact and clearly demonstrate its position as a source of disease. Therefore, when I use the word "unsuspected" I mean unsuspected by the patient, for even though he has had a toothache or an otherwise known mouth disease he does not associate it with his eye or ear disease because he does not understand, or unsuspected by the physician because he is careless in his examination and diagnosis or indisposed to attach much importance to oral diseases. The same pathological conditions of the mouth which will produce reflex eye diseases, and to which reference has

already been made, will also cause reflex aural affections, and reversely, ear diseases may produce intolerable toothache. The terminal distribution in and about the mouth of the sensory and motor branches of the sensitive trigeminus and its associates with the great sympathetic connects the teeth with the entire aural organism, and explains many of the reflex disturbances developing from the oral cavity.

The range of ear diseases produced in this way is much more limited than is the case with eye diseases, owing probably to the fact that there are fewer ear diseases than eye diseases, and also to the fact that the eye is more sensitive and susceptible to nervous conditions than the ear. Such aural affections are principally myringitis, earaches, sensitiveness of the ear canal, hyperesthesia of hearing, deafness, furuncles and eczema of the ear canals, especially in children of a tuberculous or strumous diathesis, etc. The frequent occurrence of such aural affections, especially otalgia, with the teething of children, and their almost immediate relief by lancing of the gums, is of such common observation as to excite no comment. In lancing the gums under such circumstances the incision should be deep in order to absolutely liberate the tooth, for the pressure between the gum and the tooth crown is not the essential etiological factor, but the pressure at the root ends on the branches of the fifth cranial nerve when the trouble is in the upper jaw, and on the inferior branch when in the lower jaw.

I have no doubt that careful examination of patients, both young and old, with such etiological factors in mind, would disclose the cause of many aural affections. Baldwin records seven cases of earache with no evident cause but an exposed tooth pulp, all of which yielded promptly to treatment of the teeth; two cases of severe earache during the regulation of cuspid teeth due to tension of the regulating apparatus; many cases of pain in the ear during the filling of teeth, especially molars; one case of earache due to sensitive dentin; twelve cases due to deciduous teeth blocking advancing molars; eleven cases of tinnitus aurium, much if not entirely relieved by treatment of the teeth. As can be readily imagined, it is extremely difficult sometimes to draw the line as to which eye and ear diseases are reflex in their nature, and which are produced by actual cell migration or by inflammation spreading by direct continuity of tissue. Some conditions may be easily classified, while others

must needs live so near to the borderland that their nativity is shrouded in pathological mystery. It must not be forgotten that the periosteal lining of the orbit is continuous with the alveolar border of the upper jaw, and almost so with that of the lower as well. The mucous membrane of the mouth is directly continuous with that of the conjunctiva, eustachian tube and middle ear. Occasionally the apices of the roots of some of the upper teeth extend directly into the antrum of Highmore, and from this situation disease frequently reaches the orbit through a thin partition of bone. The angular artery and certain veins run almost directly from one region to the other.

Personally I am exceedingly skeptical of those cases of so-called reflex ocular or aural disease of oral origin, where intense inflammatory or purulent conditions are present in the eye or ear. I believe such diseases to be produced either by the migration of infectious microorganisms, through the nervous or vascular structures, or else by the extension of inflammation by periosteal or mucous tissue. Arnold Knapp reports a case of a patient sixteen years of age, whose right cuspid and two upper incisor teeth had been filled at the line of the gums. Alveolar abscess followed in three days, the right side of the face became swollen and the right eye closed. Five days later the gum in front of the cuspid tooth opened and pus was discharged. The swelling diminished and the lids opened. The right eye was blind, the optic nerve white, the pupil was dilated and immovable. A firm, flat swelling appeared in the orbit. A purulent fistula was established in the cuspid fossa. A probe could be passed upward and forward under the periosteum and exposed a roughened bone detached. The eye remained blind. F. W. Marlow reports a case of a lady aged twenty-five years, who had an alveolar abscess of the left first bicuspid of the upper jaw which was opened and cured. It proceeded from an infected root canal. She developed pain in the eye and optic neuritis with great blurring of vision and subsequently entirely recovered. Dagilaiski reports a case of a boy seven years of age who suffered severely from alveolar abscess in the upper jaw accompanied with much swelling of the cheek and face, particularly about the eye. Pus was pressed from the diseased and carious tooth socket, which was the first upper left molar. The tooth was extracted and the antrum cleansed, during which process much pus escaped from the nose.

A cure followed and Dagilaiski believes that the infection had spread from the tooth along the periosteum of the upper jaw. Brunschweig has observed two cases of iritis with pus in the anterior chamber as a result of diseased teeth, and Swanzy has seen cases of orbital collulitis following inflammatory conditions in and around the teeth. It is a matter of common observation that erupting misplaced and diseased third molars often cause tonsilitis, which is followed by inflammatory and painful ear affections of a purulent or non-purulent character, probably produced by the close connection between the tonsilar region and the eustachian tube:

But it is unnecessary to further rehearse cases and illustrations; the facts are well known to us all, and I presume there is not a practitioner here present who could not substantiate all I have said, with citations from his private practice. The purpose of this paper is not to furnish new thoughts, but to emphasize old ones, for a long personal experience in ophthalmology and otology, with an inherited tendency to exaggerate the importance of odontology, leads me to the belief that proper respect is not yielded to the undoubted connection between your specialty and mine. I would particularly urge eye and ear surgeons to carefully examine the mouth as a matter of routine, not forgetting to closely scrutinize crown work and plates, remembering that crowns are often injudiciously placed, that artificial teeth sometimes do not fit, and are even occasionally fitted over broken roots, which can hardly fail to produce irritation, reflex and otherwise, that may account for physical ailments unsuspected by an inexact diagnostician.

Following the advice of Baldwin, I would urge the establishment in all free dispensaries of a dental department, where proper oral therapeutics might be administered and where cases of the nature outlined in this article could be promptly referred and correctly treated, and it is gratifying to note that at the last meeting of the National Dental Association the following resolution was unanimously adopted: "Resolved, That it is the sense of the National Dental Association that each medical college in the United States should include in its curriculum a lectureship on oral hygiene, prophylaxis and dental pathology." This resolution should be warmly endorsed by the medical profession and especially by those who are influential in framing the policies of medical instruction,

for the active influence of oral physiology or pathology upon bodily health and disease can no longer be brought into question.

It is also gratifying to know that the municipality of Strassburg has recently voted to build an $80,000 dental hospital for school children. Every pupil in the schools is to be submitted to a dental examination on entering and twice during school time until the age of thirteen. The municipality has come to the conclusion that a large proportion of the ills of young people are due to bad teeth and lack of proper dental attendance. Now, while it may not be possible to erect hospitals in all cities for this laudable purpose, it is both possible and feasible for boards of education and boards of health to appoint dentists to quickly yet efficiently examine the teeth and mouths of all public school children once a year. Those suffering from oral abnormalities can receive warning cards to be given the parents, notifying them of such conditions and advising them to have their children's mouths cared for either at some office or free dispensary. In this way the health of the coming generation can be much improved and a truly incalculable benefit conferred upon mankind. Years ago I devised a plan of this nature for the examination of school children's eyes and ears by school teachers, which has proven most successful and is now being used with gratifying results all over the United States, and even in many cities in Europe and Asia. If the plan can be successful in searching for eye and ear defects, why may it not be equally efficient in detecting those of an oral character? I believe it may, and that it needs only the combined action of a united profession to place it in operation.—*Review.*

TUBERCULOUS GLANDS OF THE NECK AND THEIR RELATION TO DENTAL CARIES, WITH SOME OBSERVATIONS ON THE NATURE OF TUBERCULOUS ABSCESSES. By A. Primrose, M.B.C.M., Edin., M.R.C.S., Eng., Toronto. Read before the Toronto Dental Society. Tuberculous infection of the glands of the neck commonly occurs from absorption of bacilli from the mucous membranes whose lymphatics pass to the group of cervical lymph glands implicated. The immediate source of infection is at times the mouth cavity, and the surgeon is not infrequently called upon to operate on the glands which receive their afferent lymphatics from that source. Thus one finds

the submaxillary or the submental group of lymph glands becoming the seat of tuberculous infection with a fair degree of frequency. Here, as elsewhere, the line of treatment which is to be advocated for tuberculous adenitis is free excision where the glands are accessible. Experience has undoubtedly shown that the safest procedure is to remove the diseased glands. The removal may be a very simple matter or a dangerous and complicated operation may be necessary. The course which a case runs subsequent to operation will depend largely upon whether or not mixed infection of the glands or the wound has occurred. If there has been mixed infection then a prolonged, painful and tedious convalescence is to be predicted, and there is also the danger of septic poisoning of a general character supervening which may endanger the life of the individual. On the other hand, if the glands be infected with the bacilli of tuberculosis only, and mixed infection has been prevented during the operation, then speedy and complete recovery is secured. We must not imagine that mixed infection occurs only at the time of operation or immediately succeeding it, for a tuberculous gland is liable to become the seat of mixed infection at any time. Consequently an individual who is suffering from enlarged glands which are thought to be tuberculous must be placed under the best conditions to minimize as much as possible this danger. I consider that the most likely source of mixed infection in cervical adenitis is the buccal cavity, and more particularly in the presence of dental caries, and for this reason I venture to bring this subject before you.

In order to make my point clear it will be necessary to consider the pathology of tuberculous adenitis and the formation of an abscess with and without mixed infection. First, let us consider the purely tuberculous process as it presents itself in a lymph gland. The gross pathological appearances vary greatly. We usually find in uncomplicated cases ovoid masses of varying size and with a consistence much firmer than the normal gland. At times the enlarged gland becomes softened, but this softening does not appear to have any definite ratio to the size attained. I could show you glands which I have removed from the neck an inch and a half long, in which no softening has taken place, while glands of much smaller size may be soft and fluctuating. When a gland becomes tuberculous there is always an attendant process of inflammation of a

low, non-specific type surrounding the infected area. This condition is found in all tuberculous processes, glandular or otherwise, and is due to the fact that the tuberculous focus acts as an irritant on the tissues in the neighborhood. While this inflammatory area to start with is non-specific in character, it is very prone to become infected with pyogenic microbes, and when septic infection has thus occurred the whole clinical aspect of the case is changed. Then again the periadenoid inflammation leads to the formation of adhesions to the surrounding structures, and thus arises a condition which makes operation for removal difficult; we occasionally have to dissect off important nerves and blood vessels which have become adherent in this way. Pus may form within the gland capsule, round about the tuberculous focus, or what is more common, it forms without the capsule in the tissues, which have become involved in a periadenitis. The gland may become wholly destroyed in the suppurative process, so that occasionally no trace of the glandular tissue is recognizable. The caseous material found in the gland is simply necrotic debris, and this also not infrequently replaces the glandular tissue. The capsule of the gland in all cases of tuberculous infection becomes thickened. Considerable enlargement of the glands, and even the formation of an abscess, may occur in purely tuberculous cases without mixed infection. Exception has been taken by some authorities to the term "tuberculous pus," and it is true that the so-called "pus" of a tuberculous abscess differs in many respects from the pus which is the result of the activities of true pyogenic microbes. We need not discuss the point here, but it is essential to emphasize the fact that the pus of a tuberculous abscess is frequently absolutely sterile, there being an absence even of the bacillus of tuberculosis itself in the fluid obtained from such a source in many cases. Again this fluid, whether containing tubercle bacilli or not, readily becomes septic and forms an excellent nidus for the growth of pyogenic organisms. All our efforts in treatment are directed towards an attempt to prevent such mixed infection.

The histological characters of a tuberculous gland are very striking. If a thin section which has been prepared for microscopical examination and mounted on a slide be held up to the light, we observe a characteristic mottled appearance, due to isolated collections of epithelioid cells. This appearance is very suggestive of the

tuberculous process, and if such a section be compared with one obtained from a gland in a case of lymph-adenoma we find the uniform appearance of the section in the latter case appears in marked contrast with the mottled appearance of the former. The gland which is infected with tuberculosis tends to caseate sooner or later, then the central portion of the caseous mass tends to liquefy, and thus you have the beginning of the tuberculous abscess. The appearance of a section of such a gland under the miscroscope may be described as follows: The capsule is markedly thickened, and immediately under this thickened capsule is the region in which the tuberculous process is actively going on, or at all events we have here the portion of the gland in which active disease is apt to be lighted up when stimulated to do so. This area of activity (or it may be in a quiescent state) possesses certain characteristic appearances under the microscope. Here we find collections of the so-called typical "histological tubercles." Each tubercle is composed of a central giant cell, with its many nuclei, frequently arranged in a horseshoe shape near portions of the periphery of the cell. Surrounding the giant cell is a group of epithelioid cells, and surrounding these another zone of round cells (leucocytes). Instead of the typical tubercle we may have the condition described by Mr. Watson Cheyne in connection with tuberculous bone disease as "tuberculous infiltration," in which we have collections of epithelioid cells, often arranged in groups or columns, with leucocytes surrounding these. Lastly, bacilli may be demonstrated by appropriate methods. The bacillus of tuberculosis is often found in the giant cell occupying a position in groups towards the center of the cell away from the nuclei. The bacilli, however, may be found also in the epithelioid cells, and it is stated that they are more constantly found in them than in the giant cells. From this circumstance Mr. Cheyne was led to look upon the epithelioid cell as the characteristic element of the tuberculous process.

It will be observed, as the result of our study of the pathological processes in a lymph gland, that as there are three zones demonstrated under the microscope in the so-called histological tubercle, so there are three zones observable in the gross appearances of an infected gland. The three zones in the histological tubercle are the central giant cell, then the zone of epithelioid cells and the outermost zone of round cells (leucocytes). The three zones in the

gross structure of an infected gland in its late manifestations would be a central zone of liquefaction (pus), surrounded by a zone of caseation, and this in turn surrounded by the zone of actively growing tubercles which lie immediately under the thickened capsule.

The tuberculous process may not be confined within the limits of the gland capsule. We find frequently that it breaks beyond this barrier and invades the surrounding tissues. This is most likely to be the case when liquefaction has occurred, and an infected gland may thus be the starting point of a tuberculous abscess of large size.

The pathological conditions I have described are those of a purely tuberculous process. We have already stated, however, that these tuberculous tissues are prone to become infected with organisms other than the bacillus of tuberculosis. As a result of such mixed infection most disastrous results may ensue. The course of an abscess which is purely tuberculous is so characteristic that it cannot readily be confused with any other process. Such an abscess may remain for months without producing any symptoms, and the only sign of its existence may be a fluctuating tumor. There is frequently no pain, no rise of temperature, and in fact, such a complete absence of acute symptoms that the old writers spoke of such as "cold abscesses." The contrast which is established if mixed infection occurs is very striking—at once all the symptoms of an acute process manifest themselves and usually in direct proportion to the size of the tuberculous abscess, destructive acute inflammatory trouble ensues.

I might illustrate the importance of the observations I have made by citing cases from my notebook, showing the course which these cases run when under observation clinically. Cervical tuberculous adenitis is more common in children than in adults, and a large number of cases are annually admitted to the Hospital for Sick Children, Toronto. As an example of a patient suffering from tuberculosis glands of purely tuberculous character I might mention that of a boy, eleven years of age, who came to me with enlarged glands in the neck. He had suffered from swollen glands, so his parents stated, for a few years previously, but they had become unusually large and tender eight weeks before he applied

to me for treatment. I cut down upon these glands and removed them, some from the submaxillary region, and some from the side of the neck lower down. The wound was sutured without drainage and the stitches were removed on the fifth day, the wound healing by first intention. The reverse picture might be instanced by the case of a boy, ten years of age, who ten weeks before he came to me had developed a painful swelling in the neck, with a temperature of 105 F. He had a tuberculous history, and had previously suffered from hip disease. No doubt the explanation of the swelling and temperature was to be found in a tuberculous gland which had become infected with some pyogenic organism. The abscess had ruptured into the pharnyx, and this gave him temporary relief, but the drainage being inefficient, the abscess recurred and was opened externally on the side of the neck. Sinuses persisted, however, and he was referred to me at this juncture for treatment. It was necessary to make extensive incisions through undermined sodden skin, which was in places on the point of sloughing. The sinuses which had burrowed in various directions in the cervical tissues were opened up freely and extensively. A pocket was found passing down behind the sterno-mastoid muscle behind the clavicle, as far as the top of the pleura in the region of the carotid and subclavian vessels. A large vein was injured during the operation and gave rise to alarming hemorrhage, and was with difficulty secured in the depth of the wound. The cavities were thoroughly curetted with the finger nail, and were then packed with iodoform gauze. The wounds healed in about two months with, however, necessarily, the development of a large amount of scar tissue and a certain amount of torticollis, which may to some degree be permanent. The termination of such a case is, however, not always so happy, as occasionally life is sacrificed under such conditions.

The clinical course of tuberculous abscesses is very similar. I could record numerous cases where tubercular abscesses have been opened up and evacuated, and then sutured without drainage, and in which healing has occurred by first intention. The most striking examples of these are found in the extensive abscesses which occur in connection with tuberculous joint disease, e. g., in the hip or spine. One case will suffice to illustrate. A girl, thirteen years of age, came to me with a large abscess of the hip. She had suffered from hip disease and was at the time wearing a hip splint

which she had worn continuously for two years. I opened the abscess under the most strict antiseptic precautions, curetted it thoroughly with my finger nail, swabbed it out with iodoform emulsion in glycerin, and then stitched it up without drainage. The wound healed by first intention. The operation was performed over three years ago and the patient has come under my observation from time to time since. She has made a complete recovery and has now discarded her splint, and I trust will suffer no recurrence. I could record numerous instances of a similar character. On the other hand, the reverse picture is all too common, where a tuberculous abscess becomes the seat of a mixed infection. It is sometimes impossible to prevent this, but occasionally it occurs through neglect of proper precautions. A tuberculous abscess, for example, may be allowed to rupture spontaneously, and then mixed infection is sure to occur. Rarely the abscess may become the seat of mixed infection before it is opened. If our antispectic precautions are inefficient we will surely get sepsis, as there is no condition with which I am familiar which so readily becomes invaded by pyogenic organisms as tuberculous abscesses. The results of mixed infection here are most disastrous. I operated in the case of a boy, twelve years of age, last July (nearly seven months ago). Mixed infection had occurred before operation. An abscess of considerable size was opened which had developed in connection with a tuberculous hip of the left side. The abscess was drained and has remained open ever since, until now it is practically closed after seven months' confinement in bed. In the case noted above the abscess healed practially in seven days, while in the latter it has taken seven months! It is exceedingly difficult to bring such a case as the last to a successful termination; the amount of nursing and attention required is enormous, the dressing must be done daily and with great care, and during that time the patient's general health must be carefully looked after. In spite of all our care, however, these patients often go from bad to worse, general septic infection occurs, visceral complications supervene, and the patient may die after a prolonged and painful illness.

My object in writing this paper is to record my belief that many of the cases of tuberculous adenitis in the neck originate in dental caries. I have cited cases which illustrate the ravages of tuberculous disease in other parts of the body, because, as a rule,

these more extensive manifestations afford a more graphic picture of the possible course of tuberculous disease than, fortunately, is usually found in the neck. Wherever tuberculous trouble presents itself, however, we must recollect that the occurrence of mixed infection may result in the most disastrous consequences, possibly endangering life, or short of that, leading to a prolonged painful and debilitating illness, resulting often in deformity and chronic ill health. While the existence of caries may be the cause of the original tuberculous infection it may also subsequently be the cause of mixed infection. There are no doubt many other reasons why caries, in the teeth of children more particularly, should have immediate attention, but from the standpoint of the practical surgeon I am convinced that the danger of producing infection of the cervical lymph glands in the manner suggested in this paper should be a powerful incentive in urging the proper care of the teeth in childhood.—*Dominion.*

EXPERIMENTS IN VULCANITE TO PREVENT VERTICAL CONTRACTION. By Dr. Stewart J. Spence, Chattanooga, Tenn. At the outset of this article the writer is confronted by a difficulty in choosing terms to express correctly that contraction which takes place in the length or breadth of a plate and that which occurs in its thickness; and in adopting *vertical* for the latter and *areal* for the former he employs these terms as serving the purpose when thus defined, rather than as claiming their correctness. Areal contraction of a vulcanite plate is more or less prevented by the contact of plaster with the plate, but vertical contraction has no such restraint; it takes place between two walls of plaster. The vulcanite would be free to shrink from both walls were it not bound to one of them by the teeth, which are imbedded in said wall. If the teeth are sufficiently bulbous or bell-shaped to remain fixed in the investing plaster after it has been softened during vulcanization, the total contraction (which occurs in cooling) takes place at the expense of the other side—that is, of the wall of vulcanite covering the ridge of the model. A plate so contracted will, other things being equal, press unduly on the palatal dome and insufficiently on the ridge. As uncontrolled shrinkage of vulcanite is about 0.5 mm. to the inch, a plate half an inch thick at its ridge would there shrink 0.25 mm., and as this is about equal to 15 folds of No. 20 tin foil, it is clear that the

adaptation of such a plate will thereby be very seriously injured.

Vertical contraction tends also to increase areal contraction; for it removes the wall of vulcanite from close contact with the wall of plaster, and so permits the vulcanite to more freely creep across the surface of the plaster. At least this appears to be a necessary theoretic deduction.

Experiments on the contraction of vulcanite. About half a year ago the writer published an article giving a record of about twenty experiments in vulcanite and its contraction (DENTAL DIGEST, August, 1903, p. 987), showing that a bar of this material three inches long by one-quarter inch thick will contract in length while cooling about 1.5 mm. With this knowledge obtained he desired to know the contractile force of such a bar, and with this object he has lately made the following experiment: Taking a bar of vulcanite of the above-mentioned dimensions, and that had not yet undergone contraction (for contraction while cooling in the vulcanizer is prevented by the rubber slightly exuding at the lid of the little metal box in which it is held for vulcanization and becoming entangled in the wire which binds the lid to the box), he tied a weight to one end, and by a string tied to the other end of the bar suspended it and the weight in boiling water for about a minute, this being sufficient time to raise the temperature of the vulcanite to that of the water. The whole was then removed from the hot water and cooled by pouring on it cold water while still suspended. It was found that a 2-lb. weight slightly increased the length of the vulcanite bar, a 1-lb. caused no perceptible change, and a ½-lb. weight permitted a small contraction—about 0.5 mm. The bar was then thrown loose into boiling water, and on being cooled again was found shrunken 1.5 mm.—about 1-16 inch. In the vulcanizer, though falling from the much higher temperature of 320° F., the contraction is but a little more than this. By this experiment it was proved that vulcanite contraction can be prevented by a slight strain. How to prevent contraction in the vulcanizer was the question—or rather, how to prevent *vertical* contraction, for areal contraction can be controlled by the use of a sufficiently firm investment.

To prevent vertical contraction. As the result of many months of cogitation on this question I have thought up three feasible methods, namely—(1) To use the long-rooted teeth made for continuous-gum work, trusting to their serrated roots to hold apart the two walls of

vulcanite. (2) To drill in the model pits which, by filling with spurs of vulcanite, will bind the plate to the model. (3) To use ∩-shaped forms of serrated wire, imbedding them in the vulcanite, instead of the long-rooted continuous-gum teeth. To these may be added a fourth—weighted rubber, which contracts about 40 per cent less than other rubbers. If there were no better way to meet the difficulty this would certainly be of value as a palliative measure.

The objection to the first of these methods is that in very thick plates the apical end of the root of the continuous-gum tooth might not reach the solid wall of vulcanite covering the ridge, but end in the porous portion, thus failing to prevent contraction. The writer lately made a cubic inch block of vulcanite which showed when sawed asunder that the solid shell averaged only 1-12 inch in thickness at each wall, while the cavity left after scooping out the spongy center was nearly ⅞ inch in diameter. If a long-rooted tooth piercing this porous mass failed to reach the farther wall it would act only on the immediate wall as regards preventing shrinkage, for the porous portion would not afford sufficient hold to the root to affect contraction of the side walls. However, this was an extreme case; few plates are so thick that they would not receive benefit from the long root of the continuous-gum tooth, especially if weighted rubber were used as a filler, this rubber being less porous as well as less contractile than other rubbers. It could undoubtedly be rendered more so by the maceration into it of filings of metal—tin for the lower jaw, aluminum for the upper.

But another serious objection to the use of continuous-gum teeth still remains—the difficulty to the dentist of obtaining them readily and in the sizes and shades desired, because of their not being carried by the average depot and traveling salesman, or only in small quantities. The second method is not subject to the above objections, and is very easily performed, but has the serious fault of not providing against vertical contraction for any other than the first vulcanization of the plate. The experiments with this method were made as follows:

Experiments with the pitting method. Two vulcanite full upper plates were made, one having pits drilled in the model, the other not. The models used in making these plates were cast in a No. 2 impression tray, and with Spence's non-expansive plaster. Two more casts were also made in the same manner and material, one to go through

the vulcanizer (unflasked), together with the two plates (to test for inter-vulcanizer expansion of the models), and the other to act as the test model, to be tried in the plates to determine the amount of their departure from the form of the models. Wax was then built on the two models and teeth set in the wax, exactly as is done in making a full upper denture. The teeth were left freely exposed, to allow the plaster to grasp them firmly. On one side of each plate the wax was thickened until it, together with the teeth, measured ⅞ inch, measuring from grinding surface to ridge. This afforded ¾ inch of vulcanite for the testing of vertical contraction.

After opening flasks and removing wax there were made with a spade drill about thirty pits in one of these models, about 1-16 inch wide and ½ inch apart. These pits were made in horseshoe-shaped rows, one extending along the ridge and one each on the buccal and palatal slopes. To give retention to those on the ridge they were drilled slantingly and about ⅛ inch deep; those on the slopes did not need to slant nor be so deep, being of themselves at an angle to the line of contraction. (Where a ridge is quite sharp all the pits should be on the slopes.) Tin foil was then placed on each model, and punctured at the pits, which showed their locations plainly by depressions in the foil resembling smallpox marks.

When the flasks were opened after vulcanization the results were found to be as expected: The test model was applied to the plates, and that one which had not been treated by the pitting method was found to have contracted on its thick side to an extent which could be seen at a glance and which admitted between test model and plate 24 folds of No. 20 tin foil, in a strip ¼ inch wide by 2 inches long; that this contraction extended the whole length of the thick portion of the plate was demonstrated by the strip of foil reaching in at least up to the cuspid before becoming tight. The other plate, on the contrary, showed perfect adaptation at both ridges, not admitting a single thickness of tin. This made it evident that the spurs of vulcanite had properly performed their work by holding the plate to the model until cooling fixed its shape permanently.

Instead of any sinking of the ridge surface there appeared on the contrary in this last-mentioned plate a slight sinking of the palate, as shown by a space between test model and vulcanite, which admitted 4 folds of No. 20 tin foil at the posterior border of the palatal dome. This was caused almost beyond doubt by the vulcanite, in

its effort to contract compressing to a small degree the investing plaster on the lingual surface of the palate. Had it been desirable to prevent this contraction it could undoubtedly have been done by drilling a few pits slantingly in the palatal dome of the model. Or it could have been effected by making the investing plaster set harder, this being only a matter of long stirring with Spence's plaster, it being capable of taking a hardness eight fold greater than that of plaster of Paris. That which was used in these experiments was stirred only three minutes and became only three or four times harder than would plaster of Paris; but this was deemed sufficient, the writer believing that this is hard enough to prevent all appreciable change of form of the model from compression in flask-closing, when ordinary care is used, and also to prevent any *undesirable* compression of either model or investment from the pressure of the vulcanite in its struggle to contract while cooling.

I say "undesirable compression," for a slight shrinkage of the palatal vulcanite and of the breadth of the plate is desirable, because throwing the bearing more on the ridge and buccal surfaces and less on the palatal roof. A plate so made is more likely to sit firmly a few weeks after insertion than is one that fits exactly at first. That which is needed is not fit but adaptation. A plate which exactly *fits* a mouth, and thus bears as much on the hard as on the soft places, will not be so firm and tight, even the first day, as one that bears a little more on the soft places—which we know are usually found on the ridge. Therefore it is good practice to shave an impression at its hard portions, deepen its rugæ (when these are hard), and build up its soft portions with layers of tin foil or by scraping the model. Moreover, there appears to be with some patients a slight absorption of the ridge following by a few weeks or months the insertion of a plate, as though the extra warmth afforded by it stimulated the osteoclasts to renewed action.

I cannot say what would result from using this pitting method in a plaster-of-Paris model, not having attempted to test the matter by experiment, but imagine that the spurs of vulcanite would need to be wider or more in number than those of my experiment to afford sufficient grasp on the much softer plaster, because plaster of Paris softens during vulcanization much more in proportion than does my plaster, coming out of the vulcanizer only one-sixth or one-eighth as firm. I was discouraged from experimenting with plaster of Paris

by the consideration that the changes which take place in a model and investment of that material would render results doubtful, and that whatever the result in one case might be, this would afford no criterion for other cases, because said changes are not constant. That the models used in the above experiments did not change shape from the action of steam in vulcanization was demonstrated by the third of the four casts, which went through the vulcanizer with the other two and came out unchanged, exactly fitting the tray in which all were cast. A still more exacting test of this matter was made in the next experiment, soon to be described.

Unfortunately the first shrinkage of vulcanite does not exhaust its capacity for contraction, for, as was shown by the writer in some previously recorded experiments in vulcanite (DENTAL DIGEST, August, 1903, p. 987), a three-inch bar of this substance will contract each time it is subjected to vulcanizing heat, up to four or six times, till, in lessening degrees, it has shrunk 3.0 mm. Therefore a plate which might be made correctly by the last related method would perhaps be ruined at its first repairing. This would be all the more likely to occur with an unyielding investment like Spence's plaster, for a soft plaster-of-Paris investment would permit a drawing down of the palatal arch of the plate and so tend to counteract the sinking at its ridge. To provide against this possible future contraction the third method was thought out, and was tested as follows:

The staple method. A vulcanite plate was made similar to the two others, differing only in the means used for preventing contraction, which was done by U-shaped serrated wires, resembling staples or carpet tacks, penetrating the vulcanite vertically; we will term them staples. After opening the flask and removing the wax the case was packed with warm rubber sufficiently full to bring the rubber in touch with the model, the flask being occasionally brought together to show when this took place. The upper surface of this rubber, bearing the impress of the ridge of model, indicated the height to which the upper portion of the staples might and should come, while their required length was easily found by thrusting into the rubber a pointed instrument until its point struck the subjacent teeth. The staples were cut accordingly, being made from the 1-12 inch wide serrated platinoid bars sold at the depots "for strengthening rubber plates." These bars were found better when annealed, being otherwise liable to break. Four of the staples were used. Over them was

placed one thickness of rubber, to prevent their actual contact with the model. As an aid to these staples, and also with a view to assisting the plaster in preventing areal contraction, pits were drilled in the *investing* plaster (not in the model), one row along the buccal and labial borders, another on the palatal slope near the teeth, and a third along the posterior palatal border. I have my doubts, however, as to their practical utility, especially those on the buccal and labial borders, for they could but feebly affect vertical contraction, and I imagine that the little of areal contraction that can take place when Spence's plaster is used is of benefit, because slightly contracting the plate; and the large contraction that occurs when plaster of Paris is used is still more desirable, being rarely enough to compensate for the expansions of the model. But the rows of pits running along the posterior border would not, unless deep, be likely to interfere with this desirable drawing down of the palatal dome, and would be of some value in preventing areal contraction directed from the posterior border toward the center of areal contraction, which is of course the center of the plate, about at the rugæ. Result: After vulcanization the test model was placed in the plate, which was found perfect along both its ridges, not admitting one thickness of foil between plate and model. There was, as before, a space of about 5 folds of tin at the dome, but this was, as previously explained, desired and designed.

An attempt had been made to remove entire from this plate the model on which it was molded and vulcanized, in order, by replacing it in the tray in which it had been cast, to determine if it had changed form during flask-closing and vulcanization. Unfortunately it broke in two in being removed; but this did not seriously invalidate it for the use intended, the fracture being sharp, so that when the two pieces were placed in the tray they virtually acted as one piece. Result: No change of shape was detectable, except in a small portion of one of the buccal surfaces where, owing to the rubber having been there largely in excess, a slight compression in flask-closing had occurred, admitting two thicknesses of the foil. This test is important because showing beyond doubt that the vulcanite, not the plaster, is to be charged with the changes of form related in this record of these experiments.

If plaster of Paris be used for model and investment, areal contraction should be welcomed, but vertical prevented; because vertical

contraction and the expansion of plaster of Paris models both conspire to throw pressure on the palate. While making these experiments the writer repeated an experiment made long ago—that of making a cast of plaster of Paris in an impression tray and then subjecting it to 320° F. in the vulcanizer for five minutes, with the result that its expansion increased from 8 to 20, as counted by folds of No. 20 tin foil placed between plaster and tray at the posterior border of the palatal dome. To compensate, therefore, for this large expansion, the free contraction of vulcanite permitted by a mushy plaster of Paris investment is desirable, but if the rubber over the ridge is to be at all thick—certainly if it be as much as one-fourth inch—one or other of these methods should be employed to prevent vertical contraction; and the staple method has, I believe—especially where plaster of Paris is used—the greatest merit, particularly where future vulcanizations may occur.—*Cosmos.*

ACTION OF ANTISEPTICS.—By Hermann Prinz, M.D., D.D.S., St. Louis. Read before the Chicago Dental Society. At present it is generally recognized that the breaking down of highly organized bodies, when subjected to proper conditions, is brought about by the activity of minute organisms, the bacteria. This process is called *fermentation*, or under certain conditions, *putrefaction*. Both terms are synchronous and are applied to strictly analogous processes. The presence of certain bacteria is instrumental in the production of severe physiological changes resulting in the various vital phenomena known as infectious diseases. As soon as this fact became recognized investigators directed their attention to the discovery of agents capable of inhibiting or destroying the action of these germs, thus rendering infected or *septic* conditions perfectly clean or *antiseptic*.

By the term sepsis, then, we understand the existence of a condition in which bacterial infection and its sequelæ, fermentation or putrefaction, are brought about by the presence of germs or their products, while *asepsis* implies an entire freedom of such infection, namely, a *sterile* condition. If a primary septic condition is changed by some method or means which inhibits the growth of putrefactive organisms *antisepsis* is secured. Consequently *antiseptics* are chemic agents which merely inhibit the action of bacteria,, while *germicides* destroy the vitality of the infective organisms. On the other hand,

disinfectants chemically change the poisonous products of the bacteria to some inert compound without necessarily killing the organisms. Thus it will be seen that an antiseptic is not necessarily a germicide or a disinfectant—for instance, glycerin will inhibit the growth of certain bacteria and is therefore antiseptic, but it has little or no power to destroy the bacteria themselves or their spores, and consequently possesses no germicidal or disinfective properties.

Frequently putrefactive processes are accompanied by the production of malodorous gases arising through and from the formation of the new compounds. Again, agents are employed to destroy these offensive odors. Such drugs are termed *deodorants.* The true deodorants usually have very little or no antiseptic action, for example, iron sulfate. If an agent is employed for the sole purpose of its cleansing power, either mechanically or chemically, for instance, soap-suds, it is termed a *detergent,* while all those chemicals which possess the ability of inhibiting the action of fermentation in general are called *antizymotics.*

It remained with the great English surgeon, Dr. Joseph Lister, to first extensively apply the principles of antiseptics in the domain of surgery, and rightly he is called "the father of antiseptic surgery." The publication of his important paper, entitled "On the Antiseptic Principle in the Practice of Surgery," in the London *Lancet* in September, 1867, marks the date of the birth of the true antiseptic era. Great discoveries and inventions, however, which revolutionize existing conditions are seldom the product of a single brain, so the discovery of antiseptics is not to be credited solely to Lister. Prior to the publication of his epoch-making essay, the writings of Pringle, Müller, Chaumette, Sivent, Bayard, Caignard de la Tour, Schwann, Pollender, Davainne and Bayer, Pasteur, Panum, Schmiedeberg, Bergmann and others laid the foundation upon which Lister could solidly build his conception of wound treatment.

Carbolic acid was the agent used, upon which the latter relied in his surgical work. Calvert had called repeated attention to the antiseptic properties of this drug; however, the French apothecary, Lemaire, first brought it prominently before the medical profession in 1865. Tyndall had conclusively proved that the floating matter of the air held in suspension living microorganisms, and Lister,

theorizing upon this supposition, believed that the air contained the germs which were most active in producing infectious diseases. Accordingly in his original method, which has been appropriately termed "Listerism," carbolic acid was disseminated throughout the operating room in the form of fine vapor, the instruments were placed in strong solutions, and the field of the operation was treated in the same manner. A better knowledge of bacteriology and wider experience soon modified this heroic method, as it was soon found that wounds would heal far better which had not been subjected to this strong, irritating antiseptic, as it lowered the vital resistance of the tissues, thus retarding rather than enhancing the process of healing. In due time it became recognized that absolute cleanliness is the essential feature in combating wound infection and since about 1890 asepsis stands preëminent as the predominating factor in surgical procedures.

To more readily comprehend the effects of a solution, that is, the dissociation of a solid, liquid, or gas in a fluid upon tissue, it is necessary to understand the physical laws governing this process. When acids, salts or bases are dissolved in a liquid, usually water, the molecules of these compounds break up into *ions*. The resulting solution possesses the property of conducting an electric current and is, according to Faraday, called an *electrolyte*. When such a current passes through the electrolytic solution the latter undergoes certain changes which are generically termed *electrolysis*. If, on the other hand, a liquid has not the power of dissociating molecules into ions it cannot conduct an electric current. Now, according to Arrhenius, the conductability of an electrolyte is proportional, depending upon (1) the number of ions, (2) the relative electric charge of these ions and (3) the speed of the ions. Further, the resulting ions depend, within limits, on the degree of dilution of the solution; a certain definite dilution dissociates completely all molecules, and further dilution merely separates the ions further from each other. For example, if codium sulfate (Na_2SO_4) is dissolved in water, two positive Na ions (Kations) and one negative SO_4 ion (Anion) are the results. Water has, so far as known, the greatest dissociating power, with the possible exception of hydrogen peroxid; however, formic acid, methyl alcohol, ethyl alcohol, ammonia and other agents are known to possess this peculiarity to a greater or less

degree. The organic compounds are much less dissociated than inorganic salts and their ions are more complex and very little understood at present.

Although all definite soluble bodies have more or less the same property, at present we can speak only of the salts of the metals and alkalies with some positive knowledge. If we separate two solutions of salts of different concentration by a permeable membrane, e. g., parchment paper, a continuous current of salt and fluid results, which ceases only after equal *osmotic pressure* (according to Boyle-van't Hoff's law) on both sides of the membrane is established. The current passes in both directions, drawing salt from the stronger to the weaker solution and water *vice versa* until *osmotic equilibrium* is established. The two final solutions are called *isotonic*.

The cells of the vegetable organisms are surrounded by colloid membranes, which are more or less permeable to fluids; much, however, depends upon the cell wall, the surrounding liquid and the affinity of the cell contents. As stated above, not all salts possess the same power of diffusion. To make this statement plainer, let me cite the following example: If a concentrated solution of magnesium sulfate is taken internally osmotic action in the intestines is set up, water is absorbed from the blood, the bowel becomes distended, the weight increases, promoting vigorous peristalsis, which results in evacuation. If, instead of a concentrated solution of the salts, a weak solution were ingested, it would have only a very mild or no effect at all.

The practical application of the above theories of physical chemistry in relation to the action of the metal salts upon bacteria is very significant. Our present knowledge of this highly interesting subject is largely the result of experiments of Paul and Krönig, which were published in the various scientific journals. It is impossible to relate the details, but I will dwell upon a few more important points. As subjects for experiments the authors used the spores of *anthrax* and the staphylococcus pyogenes aureus (a pus organism). Now, if we remember that an electrolyte in solution is dissociated into its ions only in part, when the solution is not infinitely diluted, then the effect of this solution must be attributed to the combined action of the ions and the undissociated molecules present in it. Paul and Krönig investigated first of all the role played by the ions or the undissociated molecules in the disinfectant solutions. For this pur-

pose the germicidal power of several mercury compounds which are dissociated to different degrees in aqueous solutions was examined. The following short table gives the names of a few of these compounds, arranged in the order of their decreasing degree of dissociation: 1. Mercuric chlorid, $HgCl_2$. 2. Mercuric bromid, $HgBr_2$. 3. Mercuric cyanid, $Hg(CN)_2$. If the germicidal action of the halogen ions and the undissociated molecules is slight as compared with that of the Hg ions, then the disinfectant action of these solutions will be dependent in the main upon the concentration of the Hg ions, that is, upon the degree of dissociation of these salts. We may conclude from these experiments that the greater the dissociations of the mercury compounds, that is to say, the greater the number of mercury ions present in the unit volume of the given solution, the greater is its disinfectant action. Similar results were obtained by Paul and Krönig with silver, gold and copper salts.

The investigation of the germicidal action of acids and bases has also brought many interesting facts to light. A few of the general conclusions drawn by Paul and Krönig from their experiments are the following: 1. The germicidal action of solutions of acids runs parallel to that of their degree of dissociation, that is to say, parallel to the number of hydrogen ions contained in the unit volume of solution. The anions, and also the undissociated molecules of hydrofluoric, nitric and trichloracetic acid, have a specific toxic effect upon bacteria. This, when compared with the germicidal effects of the hydrogen ions, becomes insignificant with progressive dilution. 2. The disinfectant action of bases, such as calcium, sodium, lithium and ammonium hydroxid, runs parallel to the number of free hydroxyl ions contained in the unit volume of solution.

As is the case in every investigation, new problems arise here also. Thus, for example, it has been found that while such salts as corrosive sublimate or silver nitrate when dissolved in absolute methyl or ethyl alcohol have only slight germicidal powers corresponding to the slight dissociation in these media, aqueous solutions of these salts show an increased disinfectant action when a not too large amount of these alcohols is added to them.

Very noteworthy and as yet unexplained is the increase in germicidal power shown by aqueous carbolic acid solutions when sodium chlorid is added to them. This fact, first discovered by Scheurlen, was

later exhaustively studied by Niardi, Beckman, Paul and Krönig, Scheurlen and Spiro, and Spiro and Bruns. The more recent investigations of Paul and Krönig have shown, furthermore, that the addition of organic salts diminishes the germicidal power of phenol solutions less than the addition of inorganic salts, and that the phenol solutions which contain the sodium salts disinfect more strongly than those which contain potassium salts.

Another important feature relative to the action of poisonous solutions upon bacteria is the temperature of the solutions. It has been shown by various investigators that the variations in the reaction velocity at various temperatures between a tissue and a poison are to a large extent determined by the temperature of the solution. Heider, for example, found that anthrax spores which had not been destroyed after an exposure from thirty to sixty days to the action of a 5 per cent carbolic acid solution at room temperature were killed after three minutes when the temperature was raised to 167° F. It is further proved by Koch, Röse and others that mercuric chlorid solutions or normal saline solutions, when heated to body temperature, have their antiseptic capacity increased twofold.

At present we are not able to explain the influence of temperature upon the velocity of the action of various therapeutic agents. The great practical importance of this fact is obvious, however, and should receive proper attention in the daily routine of a clinical practice. Further, it is of importance to remember that the resistance of the cell wall of the lower vegetable organisms, more so of their spores, is much greater to osmotic pressure than is the resistance of the cell wall of the higher organized beings. To search, therefore, for an ideal antiseptic which will chemically inhibit or destroy the growth of microorganisms without seriously injuring the cells of the host is, according to the conception of the present biologic laws, equally fruitless as is the search for perpetual motion.

From the large and rapidly growing class of those agents which are generically termed "antiseptics" I have selected for my present consideration one single group only, the metal salts, partly because they are utilized frequently in the daily routine of a dental practice and partly because we are able to explain, to some extent at least, their disinfectant action on the plausible basis of their simple chemic nature. The salts of the heavy metals form an important group of

those agents which collectively are known as antiseptics. Metals as such do not induce any serious symptoms in the living organism unless their salts or oxids are formed. Mercury, copper, silver, etc., may pass unaltered through the body without causing poisonous effects. As stated above, it is not the concentration of the solution alone, but also the specific action of the metal-salt which influences its power as a disinfectant, e. g., mercury chlorid. If the ion of the metal-salt solution is very complex it is less concentrated and in consequence less active, e. g., mercury cyanid.

The *local action* of the metal-salts depends largely upon the formation of metallic precipitates when brought in contact with proteids or albumen. Usually these newly formed metallic albuminates are insoluble in water; some, however, are soluble in an excess of proteids, e. g., mercury, and some will dissolve in solutions of neutral salts (sodium chlorid) or organic acids (tartaric or citric acids). When a solution of a metal-salt is applied to mucous membrane or to the surfaces of a wound the albuminates are at once precipitated and the acid with which the metal is combined is set free. Thus a continuous film is formed over the surface, which acts as a mechanical protective to the parts involved, lessening the penetration of the solution to the deeper structures. The free acid acts as an irritant, which stimulates the circulation of the part, thereby increasing the cell activity and effusion of exudates. The germs present, being largely albuminous in their nature, are acted upon in the same manner as the superficial cells; they become coagulated and the surrounding medium is changed simultaneously to an unfavorable pabulum for the new growth of bacteria. The liquid exudates, being freed from their proteids, become more diffusible and more easily absorbed; the blood vessels slightly contract and become less permeable.

The same metals attached to different acids induce different effects, depending upon the free acids, e. g., the milder acetic acid formed from lead acetate is more of an astringent than the stronger nitric acid formed from lead nitrate. This latter acid is highly corrosive and acts as an irritant. The action of the various acids attached to one metal differs widely, so much so that all intermediate stages from a mild astringent effect to a widespread necrosis may be produced. The chlorids and the nitrates form the most corrosive acids, the sulfates are milder, while the iodids and bromids

are still less irritating. The mildest acids are those formed from the organic salts.

The albuminates of the metals do not irritate unless the poisonous effect of the metals themselves is manifested. The toxic properties of the more important metals may be arranged according to the following scale, starting with the mildest one: Iron, aluminum, lead, copper, zinc, silver, mercury, etc. The organic metal compounds and the double salts of metals do not precipitate albumen, they do not irritate, and only slowly dissociate and diffuse over the parts. Within recent years, through the investigations of Bredig, solutions of very pure metals in water have been introduced for antiseptic purposes. These solutions are variously termed colloidal solutions, pseudo-solutions, or simply sols. It seems paradoxical to speak of a water-soluble gold, silver, mercury, etc. It must be borne in mind, however, that such solutions are merely *mechanical suspensions* of extremely fine particles of metal, viz., metals in their amorphous state in water. Accordingly, these pseudo-solutions of colloids (so termed because glue, of which the Latin term is colla, belongs to this group) are physically different from true solutions, viz., the crystalloids. Most likely the application of metals in their colloidal state will gain some prominence in the near future. Silver, mercury, copper and iron are produced at present in this form, and no doubt gold and others will soon follow.

For some time past chemists have endeavored to remedy the irritating properties of the inorganic metal salts by preparing synthetically organic metal compounds. In the last few years a number of these compounds have appeared upon the market, especially organic salts of silver. Some of these compounds give extreme satisfaction and it seems safe to prognosticate a future for their general use.

The foregoing attempt to explain the antiseptic action of the metal salts is based upon the laws of physical chemistry. It must be borne in mind, however, that these laws are continually shifting or, as the famous Frenchman, Renan, puts it, "chemistry, like all that is organized, is subject to the law of gradual development." One other serious problem with which we have to deal almost exclusively in experimental work in the laboratory is the fact that the test tube never can resemble the living cell and that all statements concerning abstract laws of biology cannot *a priori* be taken as absolute facts. To explain "life" upon a mechanical theorem is a failure. In con-

clusion, let me quote a few sentences taken from the work of the great Bunge, which bear a close significance to the point in view: "I think that the more thoroughly and conscientiously we endeavor to study biological problems, the more we are convinced that even those processes which we have already regarded as explicable are in reality infinitely more complex and at present defy any attempt of mechanical explanation. Thus we have been satisfied to account for the absorption of food by the alimentary canal by the law of diffusion and osmosis. But we know that, as regards osmosis, the wall of the intestine does not behave like a dead membrane. We know that the intestinal wall is covered with epithelium, and that every epithelial cell is in itself an organism, a living being with the most complex functions. We know that it takes up food by the active contraction of the protoplasm in the same way as observed in independent naked cells."—*Review.*

PERPLEXITIES IN CONNECTION WITH EXTRACTION OF TEETH. By Henry W. Gillett, D.M.D., New York. Read before the New York Institute of Stomatology, January 5, 1904. The matter of which I wish to speak first will perhaps seem to you a barren one to present. Certain perplexities of my own in connection with the extraction of teeth have led me to speak of them, with the hope that I at least may get some benefit from your comments. I am not going to open the subject of when to extract, but will assume that most of us occasionally feel it necessary to advise the extraction of an impacted third molar, or to insist upon the removal of useless foul and decaying roots. I also assume that most of us prefer that these operations should be performed by an "extracting specialist." This is a fair statement of my own position, and in the main it undoubtedly agrees with the practice of many of you.

My own experience in sending difficult cases of extraction to so-called extracting specialists has been unsatisfactory, in that they have always returned with what has seemed to me an unreasonable amount of inflammation and irritation of the parts adjacent to the operative field. Having spent much of my professional life in a small city where extracting specialists were not accessible, I have found it necessary to do some such operations myself. The very marked difference in the sequelæ of cases where the mouth

has been thoroughly sprayed immediately before the operation with some sterilizing agent, preferably a peroxid of hydrogen solution, as compared with similar cases where this course has not been followed, has forced itself so strongly upon my attention that I now consider such spraying an essential preliminary to the extraction of teeth. Similar spraying after the operation seems to me desirable but possibly less necessary.

The methods for preventing the pain of the operation itself have been developed till they make tooth extraction almost too attractive to the possessor of painful but still salvable teeth, but in many cases the more serious suffering which follows operations in a septic field seems to be taken as a necessary evil, and no effort is made to prevent it. It would seem as if in many cases the only precautions taken by the operator are to ascertain with certainty which tooth its possessor wishes to part with, and to give his anesthetic so as to avoid pain while the operation is in actual progress.

Personally I feel that this ruthless tearing away of an organ with little or no regard for the welfare of adjacent tissues is much too common to do us credit. What surgeon would endorse even the smallest cutting operation in any other portion of the human anatomy, when it was surrounded by removable calcular deposits, swarming with all kinds of bacteria, and bathed in fluid bearing pyogenic organisms from adjacent pus-pockets, without preliminary efforts at cleaning and sterilizing the operative field. Yet in this twentieth century that is what many self-styled "Oral Surgeons" are doing.

Some of you will say it is practically impossible to sterilize the mouth. This is undoubtedly true. It is also undoubtedly true that the mouth bacteria may be so thoroughly subjugated in a few minutes as to result in great practical benefit to the patient undergoing operations at that point.

This statement has been preliminary to presenting for your consideration the question whether this society, in view of the importance to its members of knowing that their patients are to receive satisfactory attention with due regard to the progress of surgical knowledge, may assume the duty of appointing a committee to formulate the general rules which seem desirable to observe in such operations, and shall (either with or without preliminary report to the society, as may be deemed best) call to the attention of such

local practitioners as advertise themselves as extracting specialists the formulated rules, and upon invitation by such practitioners, inspect their operating-rooms with a view of reporting to the society the names of those who are found equipped for the carrying out of these rules. This at first thought may seem inquisitorial, but when it is remembered that these practitioners appeal to us for their patronage, and that there is often laxness in the essentials for common cleanliness, not to mention the requirements of asepticism in their establishments, it seems to me a warrantable inquiry, and one which those extracting specialists who realize its value to them will hasten to meet in such manner as to insure the approval of the committee.—*International.*

EROSION. By E. P. Dameron, D.D.S., St. Louis. Read before the Fraternal Dental Society, March 15, 1904. Erosion is a characteristic disease of the hard tissues of the teeth, most often occurring in middle-aged persons, in which there is a loss of substance without apparent cause, most commonly on the labial surfaces of the anterior teeth and buccal surfaces of the posterior teeth, characterized by irregular or cup-shaped excavations or facets in the enamel, which presents a smooth polished appearance. It progresses, the facets increasing in area and depth slowly, and passing through the enamel enters the dentin, retaining its hardness of surface, polish and color. Decay of the teeth does not seem to progress with greater rapidity while this affection exists than at other times.

A brief history of the study of erosion may be of interest. In the year 1778 J. Hunter recorded observations of a case of erosion, this being probably the first time attention was specifically called to it. In 1843 Dr. E. Parmly observed the erosion upon a set of human teeth worn upon an artificial base. About 1873 Dr. C. R. E. Koch of Chicago wrote an exhaustive paper on the subject, saying, "At this time the most general belief, undoubtedly, is that the disease is a process of chemical dissolution." Dr. L. G. Noel of Nashville, 1875, wrote that he had observed erosion as one of the results of chronic rheumatism. Dr. R. Finley Hunt, 1879, expressed the opinion that erosion was caused by an alkaline condition of the oral fluids. In 1881 Dr. Wilbur F. Litch said that erosion unquestionably required "a vital condition of the tooth structure for its development," and that he had never seen it occur in a devitalized tooth.

This opinion was disputed and discussed until finally settled in 1892 by Dr. J. Morgan Howe, who observed the erosion of a pulpless incisor together with similar effects on other incisors having living pulps. Dr. E. C. Kirk in 1886 took the position that erosion was a constitutional disorder with a local manifestation, and that the local expression was the solvent action upon the tooth structure of an altered mucus from certain of the buccal mucous glands. He, however, gave the credit of priority to Dr. James Truman.

Much was written on this subject without advancement, until Dr. E. T. Darby, 1892, stated that erosion was due to an excess of uric acid in the blood. Dr. S. G. Perry corroborated this assertion the following year. The discussions that were then brought out gave strong support to this theory. In March, 1899, Dr. A. C. Hart said, "From my clinical experience I am inclined to believe erosion results from the removal of both the organic and inorganic matter from the enamel and dentin. From my experiments I believe this is partially accomplished by the saprophytes and other fungi. I have found evidences of erosion in the teeth of many of the exclusive flesh-eating animals, and for that reason, if for no other, I would partly ascribe it to saprophytes." December, 1900, Dr. W. N. Jones wrote: "Acid erosion of the teeth is a most aggravating and troublesome condition, especially noticeable in the case of visitors to great fruit districts, over-indulgence in the healthful but highly acid fruit, together with careless cleansing, producing a great excess of acids and the subsequent erosion." In March, 1902, Dr. E. C. Kirk, by a series of chemical experiments upon the saliva, reached the conclusion that in a case of general erosion treated by him the erosion was due to lactic acid. Dr. Kirk divides erosion into two classes: those in which the erosion is general, where all the surfaces of the teeth are uniformly involved, in which lactic acid is the solvent acid, and the other class, which is distinctly due to the exudate from abnormal buccal mucous glands, the acidity of which is due to the acid sodium phosphate or the acid calcium phosphate. He eliminates the uric acid theory and believes the localized erosion due to systemic disorders classified as diseases of suboxidation or faulty metabolism.

So much for the history and etiology of erosion; let us now pass to its treatment, systemic and local. It has been shown that any treatment tending to eliminate excess of uric acid from the blood

has lessened the sensitiveness in eroded places, consequently the diet should be restricted, avoiding acid-forming elements, such as sweet wines, champagne, beer, food too rich in starch, sweets in general and the excessive eating of meat in particular, and, in fact, all rich foods that overburden the liver and prevent it from fulfilling its function of liberating the waste products, which shall ultimately be thrown off in the form of soluble urea. Lithia water in plentiful quantities is indicated in conjunction with careful diet. In that class of erosion due, according to Dr. Kirk, to suboxidation abundant fresh air and active and constant exercise will do much towards alleviating the affection.

For local treatment, alkaline mouth-washes, such as sodium bicarbonate, lime-water, or glyco-thymoline, are beneficial. A preparation known as milk of magnesia, which is precipitated magnesium hydrate held in suspension in water, is especially valuable. A teaspoonful taken into the mouth, and allowed to float around the teeth, coats them with a slight film of the alkaline magnesium hydrate, which is sufficiently adherent to protect the teeth from acid action. This may be used with best results just before retiring. Nitrate of silver should be used, applying it directly to the eroded surfaces. After the nitrate of silver has been dried in and reapplied the stain it produces can be minimized by painting with tincture of iodin, this at the same time causing a deposit of iodid of silver, a yellowish, insoluble antiseptic powder, partially filling the fissures and eroded facets of the teeth, this substance being much more desirable than the detrimental accumulations usually found in these depressions. The iodin does not altogether neutralize the nitrate of silver, the caustic possessing the greater penetrability. Dr. G. J. Fredrichs of New Orleans, in a paper on erosion, says: "If we can bring assistance to the inherent vital force of a tooth this disease can be cured. The agent to accomplish it is nitrate of silver, for when applied to an eroded part of a tooth it puts forth its fiat and says, 'So far shalt thou go and no further.'"

In selecting material for filling the facets due to erosion preference should be given to porcelain, especially in the anterior teeth. *All fillings should be made with a concave* rather than a convex surface; the saliva then, instead of standing around the margin of the filling, has a tendency to collect in its cup-shaped surface. All fill-

ings, however, should the affection continue to progress, become faulty in time and require replacing.

There are two other forms of wasting or wearing away of the teeth to which I invite your attention, simply for the purpose of differential diagnosis.

Mechanical Abrasion or Attrition. Towards middle life the cutting edges of incisors and the grinding surfaces of the masticatory teeth show signs of wearing down, and the rapidity of the process depends upon the density of the tooth structure and nature of the food.

Chemical Abrasion. This consists in a gradual destruction of the entire substance of the crown of the tooth-enamel and dentin. It attacks superior more often than inferior teeth, although both are subject, and is comparatively of rare occurrence. It begins upon the cutting edges of the central incisors, wasting them away more rapidly at the median line, from which it progresses each way, involving the laterals, cuspids, and sometimes bicuspids, so that a curved line is presented by the edges of the teeth. If the inferior teeth are also affected, the teeth when closed present an elliptical opening. These affections might easily be mistaken for erosion; careful observation, however, will show wherein they differ from it. —*Brief.*

FORMALIN-EFFECT ON THE SKIN.—The cuticle is killed; it hardens, cracks, and desquamates; in some individuals this is attended by an eczematous rash. The nerve terminals in the skin are paralyzed, producing an annoying numbness. Where the skin is cracked the entrance of formalin becomes very painful. —W. H. DALL, *Science.*

NECK SIGN IN CHLOROFORM ANESTHESIA.—Fratti (*N. Y. Med. Jour.*) says that the value of the so-called "neck sign" of Bonneau in giving chloroform anesthesia has been overestimated by the last-named author. This sign consists in observing the tonicity of the neck muscles in narcosis. These are at first in a state of contraction, then they pass into a state of contracture which is reflex, induced by the operation or the preliminaries thereto; next the muscles are in a state of tonicity, and, finally, they become relaxed in extreme anesthesia. The anesthetist must keep the neck muscles in a state between the rigid tonicity and the absolute flaccidity mentioned. Fratti, however, points out that the contraction or flaccidity of the neck muscles in chloroform anesthesia is a matter of individual peculiarity, and by no means in constant relation to the depth of the anesthesia. He therefore considers the well-known signs of the pulse and respiration, the pupil and corneal reflexes, much more reliable than the so-called neck sign.

The Dental Digest.

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Where All Communications Should be Addressed.

Editorial.

FINAL INFORMATION CONCERNING THE CONGRESS.

The meeting of the Fourth International Dental Congress will occur before the next issue of the DIGEST reaches its readers, so we take this opportunity to again speak of the movement. We would call especial attention to the article by Dr. Kirk on page 802 of this issue, and after reading same we feel sure every dentist who has the welfare of his profession at heart will feel it his duty as well as his privilege to send in his membership fee and attend the meeting. On page 889 of this issue will be found a partial program. No progressive dentist can afford to miss the advantages embraced by this list of prominent essayists and clinicians. There seems to be in the minds of many an idea that the hotel rates in St. Louis will be exorbitant. We would refer all such to the report of the local committee of arrangements, which was published on page 764 of the June issue, from which it will be seen that there is an abundance of accommodation at prices within the reach of all. There is always a number of individuals who attend dental meetings and derive all the benefits possible without paying anything therefor. Those in charge of the Congress state that none but those who have paid the membership fee will be admitted to the clinics, meetings or any gatherings. Instead of attending without paying it is the duty of every self-respecting dental practitioner in America to send his membership fee whether or not he is able to be present. Each member is entitled to a bound copy of the Transactions, which will be a dental library in themselves. Some have been reluctant to contribute because they feared the money collected would be spent on banquets and frittered away. There is no ground whatever for such

apprehension, as every cent of the money will be devoted to the legitimate work of this great international convention. All banquets, excursions and affairs of a similar nature will be paid for by those participating therein. The committee of organization is not only paid nothing for its services, but we understand that its members have thus far met all their personal expenses incident to the work, and we would again repeat that the labor and personal sacrifice imposed on such a committee are far greater than any one who has not done similar work can imagine. The honor of American dentistry demands that the Congress shall be a complete success financially and in point of attendance. Owing to the work of the committee there is no doubt of its value and success from the professional standpoint. Let every man who has not already done so send his membership fee of $10 to Dr. C. S. Butler, Chairman of the Finance Committee, Buffalo, to-day.

CAN THE DENTIST BE OVEREDUCATED?

We would urge a careful reading of two articles in this month's issue—one on page 777, entitled "Self-Culture Essential to the Uplifting of the Profession," by Dr. J. A. Chapple, and the other on page 817, entitled "Conservatism in Dental Education," by Dr. S. W. Foster. Dr. Foster does not actually depreciate a college education for a dentist, but he places greater stress on mechanical ability, morality and diligence, and intimates that literary college training makes the student arrogant. We cannot agree with him in this. Mere mechanical dexterity does not warrant a claim to any higher rank than that of skilled workman, and without education the dentist becomes simply the artisan. As regards diligence, the man who has taken a college course has acquired the habit of study and thought, and is certainly better fitted to take up another line of study than he who has had no such training. Concerning morality, the man of liberal education, with mind trained and chastened by habits of thought, is more apt to have a high moral character than he whose mind has never been disciplined by study. It is absurd to say that added culture does not make for a clean life and habits of thought, or that the student will not have a higher moral character than the boor. It is the ex-

ception to find arrogance in the educated. The more a man studies the greater realization he has of the limitations of his knowledge, and your true student is rarely conceited. Arrogance is most frequently employed by those of very limited education in the effort to conceal their ignorance. Furthermore, the man who is content to enter upon his life's career with merely a smattering of general knowledge will have no ambition to progress further in his profession than the bare necessity for a livelihood demands. In spite of these points wherein we differ with Dr. Foster, we heartily agree with him that a diploma from a literary college alone will not make a successful dentist or one who will be a credit to his profession. A successful practitioner must have manipulative ability and honesty of purpose as well as culture, and we commend his stand that the dental colleges should look into the matter of ability and morality as well as education before admitting students to their classes.

Dr. Chapple's criticisms of the dental profession may seem a little severe, but they are nevertheless true. To say nothing of the preliminary requirements, the practice of medicine and of law, the latter especially, requires much more reading and study than does the practice of dentistry, so of necessity the members of those two professions are apt to have a broader culture than does the dentist. A man can practice either of them without possessing a particle of mechanical ability, and a man can practice dentistry with a very limited education, so naturally there are more men with a studious turn of mind in law and medicine than in dentistry. It is not necessary for the dentist to be a man of broad culture, although he should be something more than an artisan, but the greater his mental training the higher his estimation in the eyes of the community and the more powerful his influence. Other things being equal, the educated dentist will have the best class of patrons. Dentistry is a much more complex profession than it was a few years ago, and the student must obtain a better grasp of many more subjects, and to do this his mind must have been trained by previous study.

Notices.

$IMPLY A $UGGE$TION.

There i$ a little matter to which the DIGE$T beg$ to call the attention of $ome of it$ ubcriber$. We really hate to $peak of it, but $ome have $eemingly allowed it to $lip their mind$. To u$ thi$ i$ a very important i$$ue; in fact, it'$ nece$$ary in our bu$ine$$. We won't $peak further on the $ubject. Perhap$ you have already gue$$ed the drift of our remark$.

NORTHERN INDIANA DENTAL SOCIETY.

The date of the next annual meeting, to be held at Huntington, has been postponed to Oct. 18-19, 1904. A program of unusual interest has been completed, a synopsis of which will be announced in the next issue of this journal. Don't forget to read it. OTTO U. KING, Sec'y, Huntington.

SOUTHWESTERN IOWA DENTAL SOCIETY.

The eighth annual meeting of the Southwestern Iowa Dental Society will be held at Osceola, Oct. 11-12, 1904. A good program and a successful meeting are already assured, and the profession is cordially invited to attend. J. A. WEST, Sec'y, Creston.

BUFFALO DENTAL ASSOCIATION.

The Buffalo, N. Y., Dental Association held its annual meeting and banquet June 25, 1904, and elected the following officers: President, W. W. Paull; Vice-president, F. A. Ballachey; Recording Secretary, C. A. Bradshaw; Corresponding Secretary, P. C. M. Hammersmith; Treasurer, E. S. Eschelman.

NORTH CAROLINA STATE DENTAL SOCIETY.

The North Carolina State Dental Society held its annual meeting at Morehead City, July 1-2, 1904, and elected the following officers: President, R. B. Ramsey, Hickory; 1st Vice-president, J. D. Whittaker, Raleigh; 2d Vice-president, W. M. Robie, Rew Springs; Secretary, J. S. Betts, Greensboro; Treasurer, R. W. Morrow, Burlington; Essayist, J. C. Edmundson, Wilson. The next annual meeting will be held at Waynesville.

HARVARD DENTAL ALUMNI ASSOCIATION.

The Harvard Dental Alumni Association held its thirty-third annual meeting at Boston, June 27, 1904, and elected the following officers: President, Harry S. Parsons, '92, Boston; Vice-president, Ned A. Stanley, '84, New Bedford; Secretary, Waldo E. Boardman, '86, Boston; Treasurer, Harold DeW. Cross, '96, Nashua, N. H.; Executive Committee, Waldo E. Boardman, Chairman, ex-officio; Samuel T. Elliott, '01, for one year, Boston; Walter A. Davis, '01, for two years, Boston. The council is composed of the above-named officers. WALDO E. BOARDMAN, '86, Boston, Sec'y.

MICHIGAN STATE DENTAL ASSOCIATION.

The Michigan State Dental Association held its annual meeting at Lansing, June 27-29, 1904, and elected the following officers: President, F. H. Essig, Dowagiac; Vice-president, A. L. LeGro, Three Rivers; Secretary, John J. Green, Ionia; Treasurer, J. Ward House, Grand Rapids; Trustee, E. A. Honey, Kalamazoo.

WISCONSIN STATE DENTAL SOCIETY.

At the thirty-fourth annual meeting of the Wisconsin State Dental Society, held at Manitowoc, July 19-21, 1904, the following officers were elected: President, H. G. Sackett, Fond du Lac; Vice-presidents, E. C. Oviett and Percy Wright, Milwaukee; Secretary (re-elected), W. H. Mueller, Madison; Treasurer, Adolph Gropper, Milwaukee.

NEW JERSEY STATE DENTAL SOCIETY.

The New Jersey State Dental Society held its thirty-fourth annual meeting at Asbury Park, July 20-22, 1904, and elected the following officers: President, W. G. Chase, Princeton; Vice-president, S. G. Duffield, Camden; Secretary, C. A. Meeker, Newark; Treasurer, H. A. Hull; Executive Committee, M. R. Brinkman, Hackensack, N. M. Chitterling, Bloomfield, T. S. Dunning, Paterson, W. Woolsey, Elizabeth.

INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association held its annual meeting at Indianapolis, June 21-23, 1904, and elected the following officers: President, J. F. Werner, Elkhart; Vice-president, J. F. Bryan, Indianapolis; Secretary, A. T. White, Newcastle; Treasurer, C. W. Throop, Muncie; Board of Trustees, J. A. Stoeckley, South Bend; L. A. Salisbury, Crown Point; A. T. Strain, Bloomington.

GEORGIA STATE DENTAL SOCIETY.

The Georgia State Dental Society held its thirty-sixth annual meeting at Athens, June 28-30, 1904, and elected the following officers: President, Frank Holland, Atlanta; 1st Vice-president, S. H. McKee, Americus; 2d Vice-president, George H. Wells, Augusta; Recording Secretary, C. Whittington, Valdosta; Corresponding Secretary, D. H. McNeill, Athens; Treasurer, H. A. Lowrance, Athens.

PENNSYLVANIA STATE DENTAL SOCIETY.

The Pennsylvania State Dental Society held its thirty-sixth annual meeting at Wilkesbarre, July 12-14, 1904, and elected the following officers: President, I. N. Broomell, Philadelphia; 1st Vice-president, H. W. Arthur, Pittsburg; 2d Vice-president, J. B. Lippincott, Philadelphia; Secretary, George W. Cupit, Philadelphia; Corresponding Secretary, V. S. Jones, Bethlehem; Treasurer, R. H. D. Swing, Philadelphia.

RHODE ISLAND STATE DENTAL ASSOCIATION.

The Rhode Island State Dental Association held its annual meeting at Newport, July 12-13, 1904, and elected the following officers: President, P. B. Whitmarsh, Providence; Vice-president, L. A. Wilbur, Pawtucket; Secretary, C. A. Carr, Newport; Treasurer, W. J. Speer, Newport; Librarian, D. F. Keefe, Providence; Executive Committee, E. C. Stearns; Providence; J. E. Power, Providence; J. J. Dolan, Providence.

RESOLUTIONS ON DEATH OF DR. JONATHAN TAFT.

Whereas, in the death of Dr. Jonathan Taft, whose death occurred at Ann Arbor, Michigan, October 15, 1903, the dental profession has lost a most valuable member; one who gave generously of his knowledge for the advancement of his ideals; a noble manhood, ideal operations and faithful services; a man unselfish, gifted, kind and true; using his God-given talents for a noble purpose—serving man, and one whose fidelity and Christian character must ever be an example to the coming generations of an ideal dentist;

Be it Resolved, That we, his followers and members of the Northern Ohio Dental Association, in annual convention assembled at Cleveland, June 7-9, 1904, express and record our appreciation of his noble life and generous contributions to the dental profession, and urge upon every member to live the life this gifted man lived in order to bring to pass his conception of an ideal dental profession.

C. R. Butler,
Corydon Palmer,
F. S. Whitslar,
} Committee.

RESOLUTIONS ON DEATH OF DR. E. R. RUST.

Died, Thursday, June 2, 1904, at Coronado Beach, California, Dr. Edgar Rose Rust in the 45th year of his age. Dr. Rust had recently left his home in Denver and was visiting with his family places of interest on the coast of California, when an acute middle ear disease, followed by erysipelas, caused his death. Dr. Rust was the son of John and Elizabeth E. Rust, and was born at Waverly, Westmoreland County, Va., which for more than two hundred years was the home of his paternal ancestors, who were of English origin. In early life Dr. Rust acquired a good education through private tutors at home and later in the schools of the neighboring city of Baltimore. Soon after leaving school he entered upon the study of dentistry, under the preceptorship of his brother, Dr. David N. Rust of Washington, then located in Alexandria, Va. He graduated from the Baltimore College of Dental Surgery in the year 1882, and shortly thereafter became associated, on very favorable terms, with the court dentist of Madrid, Spain. This association continued but a few months, when the death of the latter left Dr. Rust under the disadvantages of a brief acquaintance with his associate's clientele and a limited command of the language of the country; but these obstacles soon disappeared, and a lucrative practice was readily acquired. The climate of

Madrid was, however, found so unsuited to Dr. Rust that he was compelled to relinquish his promising professional career there and return in 1885 to his native country, where he was again successful in establishing a large practice among the more desirable of the resident and official classes of Washington. But more than mere business success, which he seemed quite able to attain anywhere in the world, Dr. Rust's genial and sociable nature found a greater degree of gratification through the large measure of social advantages which he enjoyed at the Nation's Capital. He was an honored and active member of the old Washington City Dental Society, and was regarded by its members as an exceptionally skillful operator, being one of the few who operated with equal facility according to the higher ideals of both the cohesive and non-cohesive gold advocates. Among his numerous Washington friends were numbered the best type of his own and other professions. and the trial of his life came when, acting on the advice of his physicians, he was compelled to sever these relations and seek to maintain health in a more suitable climate. It was under such circumstances that he resigned the presidency of the Washington City Dental Society in 1891, gave up his social and professional connections, and removed to Denver, where he continued in professional labors for three years, when he retired from active practice and spent his remaining years in country life near Denver. While he continued actively and successfully several business enterprises, he took an especial pride in owning and raising fine stock, some of his horses being among the most valuable in America.

Dr. Rust married in 1894 Miss Stella Hoyt, a member of an old and highly respected Denver family. His wife and their three children survive him.

At a meeting of the District of Columbia Dental Society, formerly the Washington City Dental Society, held June 21, a resolution was passed instructing the undersigned Committee to furnish the dental journals with the above sketch, and to convey to Dr. Rust's family suitable expressions of the Society's sympathy and sorrow.

Committee, WMS. DONNALLY, W. E. PAIRO, G. F. SIMPSON.

INTERNATIONAL DENTAL FEDERATION.

The International Dental Federation will carry out the following program in the Coliseum at St. Louis, on Friday, August 26, at 11 a. m., Dr. Charles Godon presiding:

Address of Welcome by Dr. William Conrad of St. Louis.

Response by Dr. Godon.

Address by a representative of the Louisiana Purchase Exposition.

Address by the Mayor of St. Louis.

Response by Dr. H. A. Smith of Cincinnati.

Short addresses by the representatives of the foreign countries present; after which the President's address by Dr. Charles Godon.

Report by the Secretary General, Dr. E. Sauvez.

Adjournment, subject to the call of the President.

Commission on Education, Prof. Truman W. Brophy of Chicago presiding, will meet in the Coliseum Building, August 26, at 2 p. m.

Address by the President, Dr. Brophy.

Dr. Charles Godon will give a resumé of the status of dental education in France.

Dr. Mitchell of London will make some observations on technical education.

Drs. H. L. Banzhaf of Milwaukee, C. N. Johnson of Chicago, M. W. Foster of Baltimore, and Waldo E. Boardman of Boston, will read papers.

Dr. Gordon White of Nashville will make a short address on the present status of dental education in the United States.

Dr. R. B. Weiser of Vienna, Austria, will give an address on education.

Commission of Hygiene and Public Dental Service, Prof. W. D. Miller of Berlin, Germany, presiding, will convene Friday, August 26, at 2 p. m.

Address by Prof. Miller on Dental Hygiene in Germany.

Dr. George Cunningham of Cambridge, England, will present a report on Public Dental Service, by the late Dr. J. Franck of Vienna, Austria, with comments. Other papers will be presented by members of the Commission. Dr. E. Forberg of Stockholm will give a paper on Hygiene and Public Service.

Commission on International Dental Press, Dr. E. Forberg of Stockholm, Sweden, presiding, will convene Friday, August 26, at 4:30 p. m., in the French Building at the Fair Grounds.

Address by Dr. E. Forberg, President.

Paper by Dr. A. W. Harlan of New York—"The Advantages of an International Review."

The program for Saturday will be published and distributed early Saturday morning.

Dr. Conrad has secured the use of the French Building for the members of the F. D. I. from 4:00 to 6:00 p. m., Friday, August 26.

The Executive Council will meet at 6:30 p. m. in the Hotel Jefferson.

Members of the dental profession affiliated with the dental societies of the United States or of foreign countries are cordially invited to join any or all of the sections of the International Dental Federation.

On behalf of the Federation.

A. W. HARLAN, Vice-President, 1122 Broadway, New York.

PROGRAM OF THE FOURTH INTERNATIONAL DENTAL CONGRESS.

August 29 to September 3, 1904.

DEP'T A—SCIENCE.

SECTION 1.—ANATOMY, PHYSIOLOGY, HISTOLOGY AND MICROSCOPY. (*Chairman*—DR. M. H. CRYER, 1420 Chestnut st., Philadelphia.)

Florestan Aguilar, Madrid, Spain. "General Anesthesia by Somnoform."

G. G. Campion, Manchester, Eng. "Determining the Actual Path and Extent of Movement of the Mandible Condyle in the Living Subject."

D. E. N. Caush, Brighton, Eng. "Is There Uncalcified Tissue in the Enamel?"

M. H. Cryer. (Subject to be announced.)

W. T. Eckley, Chicago. "Phylogenetic Evidence Regarding the Function of the Accessory Sinuses in Man."

John E. Grevers, Amsterdam, Holland. "Anatomy of the Facial Skull—Normal and in Mouth-breathers."

——— "Geometrical Construction of the Mandible."

——— "Behavior of the Teeth Under Polarized Light."

A. Hopewell-Smith, London. (Subject to be announced.)

Eugene S. Talbot, Chicago. (Subject to be announced.)

A. H. Thompson, Topeka, Kan. "Ethnographic Odontography: The Mound-builders and the Pre-Indian Peoples of the Mississippi Valley."

J. G. Turner, London. (Subject to be announced.)

Arthur S. Underwood, London. (Subject to be announced.)

O. Walkhoff, Munich. "Concerning the Crania of Diluvial Peoples." (Illustrated with lantern slides.)

SECTION II.—ETIOLOGY, PATHOLOGY AND BACTERIOLOGY. (*Chairman*—DR. R. H. HOFHEINZ, Chamber of Commerce, Rochester, N. Y.)

C. F. W. Boedecker, Berlin. "Percussion in Dental Diagnosis."

G. W. Cook, Chicago. "The Effects of Chemical Agents on Bacteria, with Relation to the Saliva."

Samuel A. Hopkins, Boston. "Application of the Results of Research Work to Daily Practice."

W. H. G. Logan, Chicago. "A Consideration of Some of the Etiological Factors that Produce Tissue Changes of the Alveolar Process and Overlying Soft Parts."

Jos. P. Michaels, Paris. "Sialology: Differential Analyses; Elements of Value in Medical Diagnosis."

W. D. Miller, Berlin. "Researches Relating to Various Pathological Processes in the Teeth."

Louis Ottofy, Manila, P. I. "Observations on the Causes of Erosion: (a) Erosio Areca (betel erosion); (b) Erosio Orientalis."

J. D. Patterson, Kansas City. (Subject to be announced.)

M. L. Rhein, New York. (Subject to be announced.)

Oskar Römer, Strasburg, Ger. "Some Patho-histological Observations on Pyorrhea Alveolaris."

D. D. Smith, Philadelphia. "Pericemental Abscess."

Eugene S. Talbot, Chicago. "Constitutional Causes of Tooth-Decay."

F. Vicentini, Chieti, Italy. "Leptothrix Racemosa."

SECTION III.—CHEMISTRY AND METALLURGY. (*Chairman*—DR. J. D. HODGEN, 1005 Sutter st., San Francisco.)

J. P. Buckley, Chicago. "Chemistry of Pulp-Decomposition."

H. C. Carel, Minneapolis. (Subject to be announced.)

J. D. Hodgen, San Francisco. "Chemistry and Dentistry.

Hof-Zahnarzt W. Pfaff, Dresden. "Das Alúminium und seine Anwendbarkeit in Allgemeinen."

R. W. Simon, Boston. (Subject to be announced.)

Herbert L. Wheeler, New York. "The Chemistry of Porcelain."

SECTION IV.—ORAL HYGIENE, PROPHYLAXIS, MATERIA MEDICA AND THERAPEUTICS, AND ELECTRO-THERAPEUTICS. (*Chairman*—DR. A. H. PECK, 92 State, st., Chicago.)

Samuel Taylor Bassett, St. Louis. "Application of Electro-Therapeutics to Dental Surgery."

L. P. Bethel, Columbus, Ohio. "Some Results from Dental and Oral Prophylaxis."

Julio Endelman, Philadelphia. "Contribution to the Therapeutics of Post-Extraction Accidents."

Richard Grady, Annapolis, Md. "Oral Hygiene: Mastication."

J. E. Hinkins, Chicago. (Subject to be announced.)

Edward Hoffmeister, Baltimore. "Materia Medica."

Prof. Dr. Jessen, Strasburg; Dr. Loos, Vienna, and Zahnarzt Georg Schlaeger. I. "Zahn-hygiene in Schule und Heer." II. Eine Wandtafel für den Ausschauungsunterricht in der Schule in Farben, "Gesunde und Kranke Zähne." III. Eine Wandtafel, ii. Auflage auch farbig, "Die Zähne und ihre Pfläge."

Weston A. Price, Cleveland. (Subject to be announced.)

E. Sauvez, Paris. "Study of the Various Means of Inducing Local Anesthesia for Extraction of the Teeth."

Zahnarzt Dr. Schaeffer-Stuckert, Frankfort-on-Main, Ger. "Paranephrin Bitsert: A New Preparation of Kidney Atrabilarian in Connection with Local Anesthetics in Dentistry."

Edward Schlinkmann, Baltimore. "Electric Absorption in Therapy."

C. R. Taylor, Streator, Ill. (Subject to be announced.)

DEP'T B—APPLIED SCIENCE.

SECTION V.—ORAL SURGERY. (*Chairman*—DR. G. V. I. BROWN, 445 Milwaukee st., Milwaukee.)

Chairman's address: G. V. I. Brown, Milwaukee. "Oral Surgery: Its Relations to General Surgery and Dentistry."

T. W. Brophy, Chicago. "Necessity for Early Operation for Cleft Palate."

T. L. Gilmer, Chicago. "The Teaching of Oral Surgery in Our Dental Schools."

H. H. Grant, Louisville, Ky. "Solid Tumors Involving the Body or Ramus of the Inferior Maxillary Bone."

J. G. Kiernan, Chicago. "Embryogenetic, Congenital and Acquired Stomato-Neurologic Relations."

A. H. Levings, Milwaukee. "Importance and Methods of Early Diagnosis of Malignant Growths Affecting the Maxillary Bone."

J. S. Marshall, San Francisco. "Fractures of the Mandible and Their Treatment."

E. S. Talbot, Chicago. "Etiology of Cleft Palate and Hare-lip."

SECTION VI.—ORTHODONTIA. (*Chairman*—DR. EDWARD H. ANGLE, 1023 N. Grand Ave., St. Louis.)

Edward H. Angle, St. Louis. "Malocclusion: Class II and Its Divisions."

G. V. I. Brown, Milwaukee. (Subject to be announced.)

L. C. Bryan, Basle, Switzerland. "Nature as a Regulator and Our Duty as Her Assistants."

Calvin S. Case, Chicago. "Principles and Methods of Retention in Orthodontia."

M. Chiwaki, Tokio, Japan. (Subject to be announced.)

Wm. Slocum Davenport, Paris. "Contribution to the Treatment of Short Bite and Jump Bite Cases."

Robert Dunn, San Francisco. "Mesial Position of the First Molars in Class I."

John E. Grevers, Amsterdam, Holland. "Proposal for an International Nomenclature for the Various Forms of Malocclusion."

Chas. A. Hawley, Columbus, Ohio. "Method of Determining the Normal Arch, and Its Application in Orthodontia."

Francisque Martin, Lyons, France. "The Correction of Deformities in Fractures of the Nose."

R. Ottolengui, New York. "Spreading the Maxillæ *versus* Spreading the Arch."

W. Booth-Pearsall, Dublin, Ireland. "Irish Types of Malocclusion."

Herbert A. Pullen, Buffalo. (Subject to be announced.)

Jose J. Rojo, Mexico City, Mex. "Study of the Etiology of Anomalies in Human Teeth."

Dr. Schroeder, Greifswald, Ger. "Prognathous Forms and Their Orthopedic Treatment."

A. Hopewell-Smith, London. (Subject to be announced.)

J. Sim Wallace, London. "Nasal Obstructions and Mouth-breathing, with Special Reference to Malocclusion of the Teeth."

S. Merrill Weeks, Philadelphia. (Subject to be announced.)

Edmund Wuerpel, St. Louis. "Art."

Franz Zeliska, Vienna. (Subject to be announced.)

SECTION VII.—OPERATIVE DENTISTRY. (*Chairman*—DR. C. N. JOHNSON, Marshall Field Bldg., Chicago.)

E. A. Bogue, New York. (Subject to be announced.)

Jas. M. Magee, St. Johns, N. B. "The Instrumentation and Filling of Crooked Root-Canals." (Illustrated.)

Sylvester Moyer, Galt, Ont. "The Enamel and Its Consideration in Cavity Preparation."

C. G. Myers, Cleveland. (Subject to be announced.)

Garrett Newkirk, Los Angeles. "The Whole Question of Matrices and Their Uses."

Frank L. Platt, San Francisco. (Subject to be announced.)

Geo. C. Poundstone, Chicago. "The Cement Problem in Inlay Work."

M. L. Rhein, New York. (Subject to be announced.)

Arthur Scheuer, Teplitz, Austria. "Tin-Cement, Sponge Tin: Two New Filling Materials and Their Uses."

E. K. Wedelstaedt, St. Paul. "Gold-and-Tin."

H. L. Wheeler, New York. (Subject to be announced.)

SECTION VIII.—PROSTHESIS. (*Chairman*—Dr. C. R. Turner, 33d and Locust sts., Philadelphia.)

L. W. Baker, Boston. (Subject to be announced.)

George Brunton, Leeds, Eng. (Subject to be announced.)

Reuben C. Brophy, Chicago. "Rationale of the Use of Materials for Baseplates in the Construction of Artificial Dentures."

Calvin S. Case, Chicago. "The Mechanical Treatment of Cleft Palate."

Edw. G. Christensen, Drommen, Norway. "Which is the Ideal Crown—the Banded or the Crown Without Band?"

B. J. Cigrand, Chicago. "Facial Guide Lines as Taught by Artists."

Bernard Frank, Amsterdam, Holland. "A New Articulator on Anatomical Principles."

Hart J. Goslee, Chicago. "Porcelain Crowns."

F. H. Mamloek, Berlin. "(a) Ueber Porzellanstiftzähne. (b) Ueber Magnalium Prothesen und ihre Herstellung nach Dr. Eug. Müllerschen Gummidrucksystem."

Francisque Martin, Lyons, France. "Immediate Prosthesis, after the Method of Dr. Claude Martin."

Joseph Nolin, Montreal. "The Decline of Estheticism in Prosthesis."

B. Platschick, Paris. "(a) Influence de Fauchard sur la Prothèse dentaire. (b) Lés dents à tube en génêral et leur emploi special pour les pièces à gencive continue. (c) Contribution à l'êtude des Couronnes."

Jas. H. Prothero, Chicago. (Subject to be announced.)

Rudolph Weiser, Vienna. "Some Cases Illustrating the Possibilities of Prosthetic Dentistry."

E. Lloyd Williams, London. (Subject to be announced.)

Geo. H. Wilson, Cleveland. (Subject to be announced.)

SECTION IX.—EDUCATION, NOMENCLATURE, LITERATURE AND HISTORY. (*Chairman*—Dr. Truman W. Brophy, Marshall Field Bldg., Chicago,)

M. Chiwaki, Tokio, Japan. "Dentistry in Japan."

Ch. Godon, Paris. "Educational Standards of Europe."

S. H. Guilford, Philadelphia. "Nomenclature."

A. W. Harlan, New York. "Dental Literature."

A. O. Hunt, Omaha, Neb. "The Count System of Students' Credits."

Chas. McManus, Hartford, Conn. "International Character of the Early Development of Dentistry in America."

Louis Ottofy, Manila, P. I. (Subject to be announced.)

Jose J. Rojo, City of Mexico, Mex. "Historical Annotations and Present Condition of Dental Education in the City of Mexico."

B. L. Thorpe, St. Louis. "History of American Dentistry."

James Truman, Philadelphia. "A Practical View of Education."

SECTION X.—LEGISLATION. (*Chairman*—DR. WM. CARR, 35 West 46th st., New York.)

(Not received.)

CLINICS.

(Reports for the East and South have not yet been received.)

Porcelain.

C. C. Allen, Kansas City.
W. V-B. Ames, Chicago.
E. H. Ball, Tama, Iowa.
F. E. Cheeseman, Chicago.
W. A. Coston, Ft. Scott, Kan.
W. H. Cudworth, Milwaukee.
A. W. Dana, Burlington, Iowa.
S. F. Duncan, Joliet, Ill.
Adam Flickinger, St. Louis.
V. H. Frederick, St. Louis.
H. J. Goslee, Chicago.
F. B. James, Wilton Junction, Iowa.
Robt. LeCron, St. Louis.
L. A. Meyer, Oconomowoc, Wis.
J. E. Nyman, Chicago.
W. T. Reeves, Chicago.
W. H. Taggart, Chicago.
C. N. Thompson, Chicago.
J. E. Wait, Superior, Neb.
C. M. Work, Ottumwa, Iowa.

Gold Inlays.

F. T. Breene, Iowa City, Iowa.
O. H. Simpson, Dodge City, Kan.
C. N. Thompson, Chicago.
W. F. Whalen, Peoria, Ill.
C. H. Wright, Chicago.

Surgery.

T. W. Brophy, Chicago.
T. L. Gilmer, Chicago.
G. D. Moyer, Montevideo, Minn.

Gold Fillings.

A. G. Fee, Superior, Wis.
F. O. Hetrick, Ottawa, Kan.
J. G. Pfaff, St. Louis.
C. H. Seeger, Manitowoc, Wis.
F. G. Van Stratum, Hurley, Wis.
J. W. Wick, St. Louis.

(*G. V. Black Club.*)

S. Bond, Anoka, Minn.
K. E. Carlson, St. Paul.

W. R. Clack, Clear Lake, Iowa.
J. V. Conzett, Dubuque, Iowa.
Wm. Finn, Cedar Rapids, Iowa.
S. R. Holden, Duluth, Minn.
A. M. Lewis, Austin, Minn.
J. B. Pherrin, Central City, Iowa.
G. A. Rawlings, Bismarck, N. D.
A. J. Schlueter, Aberdeen, S. D.
A. C. Searl, Owatonna, Minn.
J. F. Wallace, Canton, Mo.
E. K. Wedelstaedt, St. Paul.
R. B. Wilson, St. Paul.

Gold Crowns.

J. G. Hollingsworth, Kansas City, Mo.
C. M. Work, Ottumwa, Iowa.

Pyorrhea Alveolaris.

W. H. G. Logan, Chicago, Ill.
O. H. Manhard, St. Louis.
G. R. Richter, Milwaukee, Wis.
C. R. Taylor, Streator, Ill.

Extracting.

J. W. Slonaker, Chicago, Ill.

Miscellaneous.

H. F. Cassel, St. Louis. (Striking up partial gold plate with swaged enforcement single thickness gold.)

W. L. Ellerbeck, Salt Lake City, Utah. (Electric furnace construction.)

Otto J. Fruth, St. Louis. (Replantation with porcelain restoration.)

R. R. Johnson, Great Falls, Neb. (Artificial velum and obturator.)

Elgin MaWhinney, Chicago. (New drugs; valuable old ones; with therapeutics and indications for uses.)

T. W. Pritchett, Whitehall, Ill. (Bonwill method of articulating full dentures.)

J. B. Ridout, St. Paul. (New method of backing facings for Richmond crowns; new method of making continuous gum plate; method of putting gold corner or filling in porcelain tooth.)

H. A. Shannon, Lincoln, Neb. (Esthetic crowns and dummies.)

C. O. Simpson, St. Louis. (Demonstrating strength and durability of amalgams and cements.)

G. D. Sitherwood, Bloomington, Ill. (Soldering bands and fixtures; gold plating and adjusting.)

W. R. Smith, Pawnee City, Neb. (Prosthetic.)

Richard Summa, St. Louis. (Practical application of Angle fracture band.)

S. H. Voyles, St. Louis. (Saddle bridge; pinless teeth.)

E. R. Warner, Denver. (Masticating force of human jaws, demonstrated by appliances.)

(SUBJECTS NOT GIVEN.)

C. S. Case, Chicago.
W. D. James, Tracy, Minn.
F. E. Roach, Chicago.
Jas. Weirick, St. Paul.

News Summary.

W. W. DEAN, a dentist at Lacon, Ill., died May 15, 1904.

W. B. JACKSON, a dentist at Commerce, Ga., died June 24, 1904.

W. D. MILTON, a dentist at Silverton, Colo., attempted suicide June 17, 1904.

S. M. BLAKE, 88 years old, a dentist at Bellows Falls, Vt., died June 26, 1904.

E. P. HAYES, 48 years old, a dentist of Chicago and New York, died July 14, 1904.

J. T. SWARTZ, 48 years old, a dentist of Tyrone, Pa., died June 21, 1904, of paralysis.

JOSEPH CHAMBERS, a dentist at Barretsville, W. Va., died June 20, 1904, of consumption.

J. H. SHERMAN, 55 years old, a dentist at Storm Lake, Ia., died June 24, 1904, of paralysis.

CHAS. L. STEEL, 44 years old, a dentist of Richmond, Va., died June 28, 1904, after a short illness.

S. W. MOULTON, 62 years old, a dentist at Lyons, O., died suddenly of heart failure July 13, 1904.

H. B. MAGRUDER, a dentist of New Orleans, was seriously injured recently in a street railway accident.

H. C. HOWELLS, 87 years old, a dentist of Hamilton, O., died suddenly of heart failure June 24, 1904.

ALBERT WESTON, 32 years old, a dentist at Kansas City, Mo., died suddenly July 22, 1904, of heart failure.

DECEPTIVE.—"Miss Slimsby's neck looks like ivory, doesn't it?" "Yes, but it really is nothing but bone."—*Brooklyn Life.*

S. W. WHITNEY, a dentist at Albany, N. Y., is reported as critically ill from ptomaine poisoning, but will probably recover.

DIVORCE.—July 15 Mrs. Sadie Michael secured a divorce from her husband, Otto C. Michael, a dentist of Chicago, on statutory grounds.

LUBRICATING RUBBER DAM.—Vaseline is preferable to soap for smearing about the holes in rubber dam.—SYLVESTER MOYER, *Review.*

DESECRATION.—One of the dental students said he would use alcohol and the hot air syringe to desecrate the cavity before filling.—*D. O. & L.*

HYPERSENSITIVE.—Nervous old gentleman with putrescent pulp about to be given vent: "Doctor, would you mind wrapping a bit of cotton on the end of that drill?"—*D. O. & L.*

TO REMOVE TIN FOIL FROM VULCANITE PLATE.—Before flasking the case soap the model, and when vulcanized the tin foil can be stripped from the plate with ease.—C. L. DAVIS, *Summary.*

TO RELIEVE NEURALGIA OR MUSCULAR PAIN.—Guaiacol mixed with an equal part of glycerin and applied over the seat of neuralgia or muscular pain will often give quick relief.—*Med. Summary.*

WANTS TEETH ATTACHED.—A dentist in Cincinnati, who won a suit for an unpaid bill against a woman patient in a justice court, has taken the case to a higher court and wants the teeth attached.

GOLD BRIDGE STOPS BULLET.—A discharged laborer at Springfield, Mass., recently shot his employer in the mouth, but a heavy gold bridge broke the force of the bullet, and only a slight wound was inflicted.

DENTIST SENTENCED.—A. R. Markel, a dentist of Tyrone, Pa., was sentenced June 29 to the penitentiary for criminally assaulting a young girl while she was under the influence of an anesthetic in his office.

RECOVERS FROM STREET RAILWAY COMPANY.—Walter A. Low, a dentist at Catonsville, Md., recently obtained a verdict for $700 against a street railway company of Baltimore for injuries received by him in a collision.

CONVENIENT METHOD OF MOUNTING DISKS.—Two disks mounted on the mandrel with the smooth surfaces in contact will be found to work nicely where two surfaces can be used to advantage.—R. M. PEARCE, *Review.*

STICKS AT IT.—"Consider the porous plaster, my son," remarked the philosopher, "and don't get discouraged. Everybody turns his back on it, yet it hangs on and eventually achieves success by close application.—*Chicago News.*

GAS MAKES PATIENT FIGHT.—A young man of Baltimore recently took gas prior to the extraction of a tooth. When it came out he felt some pain and proceeded to pound the dentist until the effects of the anesthetic passed off.

MISSING DENTISTS.—C. W. Creath, a dentist of Toledo, has left the city and his wife and friends are in ignorance of his whereabouts.—H. W. Bates, a dentist of Denver, recently left home suddenly without informing his wife or friends where he was going.

ARTERY SEVERED BY STONE.—A dentist of Everett, Wash., was recently working on a woman patient, when a small carborundum stone slipped from the tooth and severed a branch of the lingual artery. The hemorrhage was severe, but was finally controlled.

TOOK TEETH FROM WOMAN'S MOUTH.—A dentist of Bellefontaine, O., has been bound over for trial on charges brought by a woman, who alleges that after she had almost completed payment for a set of artificial teeth which the dentist made, he removed the plate from her mouth and refused to give it back until she had settled his bill in full.

GOSSIPING WITH PATIENTS.—Too many dentists use their operating chairs as barbers are said to do—a place for dispensing gossip. Cultivate a proper professional attitude of kindness and affability, but do not gossip with your patients.—C. R. TAYLOR, *Review.*

CLEANING IMPRESSION TRAYS.—Mercury and whiting, rubbed together and applied to impression trays after removing wax, plaster, etc., keeps them looking like new. This suggestion I received from Dr. McCulloch of Perth, Ont.—A. W. THORNTON, *Review.*

FIRES.—Frank L. Fuller, Sisson, Cal., June 26, loss $300.—I. Unger, Detroit, June 29, loss $100.—American Dentists, Detroit, July 18, loss $200.—Consolidated Dental Company, Brooklyn, July 1, loss $100.—J. D. Whitaker, Charlotte, N. C., June 22, loss $100.

TO CLEAN PLASTER BOWLS.—When plaster has been left in the bowl till it becomes hard, pour boiling water in the bowl and allow it to remain for about two minutes. The plaster can then be easily detached, in most cases without the aid of a spatula.—ABRAHAM M. WAAS, *Review.*

TO REMOVE WAX FROM FLASK.—To remove the wax from flask, place in waterbath over the fire with the teeth *downward.* This will warm the wax about the teeth, while the palatal portion is still tough, and the wax can be removed almost in a single piece.—*O E. Green,* Clinton, Ia.

SUIT AGAINST COLLEGE.—Dr. H. P. O'Connor, vice-president of the Northern Pacific Dental College, located at Portland, Ore., has brought suit against the president and the secretary and treasurer of the corporation, alleging a conspiracy to defraud the stockholders, and asking for a receiver.

CARRYING PUMICE.—When using felt cones or wheels in polishing rubber plates, gold crowns, etc., hold a piece of soap against the wet cone before applying the pumice. The soap on the cone prevents the development of too much heat and will also carry the pumice.—D. E. SHEEHAN, *Summary.*

REPAIRING A LOWER PLATE.—Drill two small holes through the plate on either side of the fracture, insert binding wire through these and twist the ends together. This will bring the broken parts into correct relationship and hold them while model is being obtained.—A. W. THORNTON, *Review.*

TO STOP NOSE BLEED.—Grasp the nose between the thumb and forefinger and press backward against the alveolar border of the maxilla and downward against the teeth. This compresses the lateralis nasi and septal arteries. Satisfactory results also follow the use of tannin and acetanilid.—*Laryngoscope.*

TELEPHONE COMPANY SUED.—T. M. Smith, a dentist of San Francisco, has sued the telephone company of that city for $5,000 damages, alleging that his business was injured to that amount by the company's failure, although he was a regular subscriber, to put his name and number in its telephone directory.

QUACK DENTISTS.—It is true beyond question that hundreds of people will and do employ quack dentists who would not think of employing a quack physician. This is true because we have made the purely mechanical side

of our work the basis for charge and have given the scientific and professional part free.—DR. S. H. VOYLES, *Era.*

MAN.

Man at his very best,
Reduced to lowest terms,
Is an incubation nest
For ten thousand million germs.—*Forum.*

ALL OVER.—After being very busy for some two hours with a large gold filling, the dentist cast a casual glance at his patient, a young lady of nervous temperament, and observed her to be very pale, and her breathing was labored. "What's the matter, Miss?" said he. "Do you feel faint?" "Faint!" said she. "Why, I fainted half an hour ago; I'm getting better now."—*Record.*

SENSITIVE DENTIN.—In the case of cervical cavities, which are always very sensitive, I use a local anesthetic hypodermically, exactly as for extracting. Put on dam and dry thoroughly, touch with carbolic acid, followed by warm water. Use sharp burs and run engine fast. The adjusting clamp cannot be felt, no matter how far below the gum the cavity extends.—I. B. KENNEY, *Summary.*

REMOVAL OF RUST FROM STEEL INSTRUMENTS.—To remove rust from steel instruments, Sangu recommends placing them overnight in a saturated solution of zinc chlorid. The rust disappears through reduction. On removing the instruments they are to be rinsed in clear water, placed in hot soda and soap solution, and dried. It is also advantageous to polish with absolute alcohol and chalk.—*Pacific Med. Jour.*

BANKRUPT.—Walter G. Dowling, a dentist of Dedham, Mass., declared bankruptcy June 27, liabilities $4,699, assets $40.—R. B. Prettyman, a dentist of Rockford, Ill., filed a petition in bankruptcy June 30, scheduling liabilities $1,458 and assets $55.—J. Steven Scott, a dentist of Boston, declared bankruptcy June 21, liabilities $4,969, assets, $602.—The Toledo Dental Company, located at Toledo, O., asked for the appointment of a receiver June 27.

FATALITIES.—Last month a woman died in a dentist's chair at Westfield, N. Y. She wanted the dentist to administer chloroform, and he was unwilling to do so but let her smell a few drops on a handkerchief. She died from heart failure and shock after one tooth was extracted.—Last month a young man in Evanston, Ill., insisted on having an aching tooth pulled, although the dentist wished to treat it. He began to suffer immediately after it was extracted and died in a few hours.

MORE NICE REMARKS.—It has been my pleasure and profit to read your splendid journal, THE DIGEST, during the past five or six years. W. J. Hunt, Memphis, Tenn.—THE DIGEST is an up-to-date journal and I like it very much. H. C. Reeves, Fairport, N. Y.—My office would not be complete without THE DIGEST. S. D. Towle, Sheridan, Wyo.—Please continue THE DIGEST, as I can't do without it. J. M. Murphy, Temple, Tex.—I consider THE DIGEST the very best journal that I take, and am always ready to remit the small subscription price that you charge for it. D. M. Haste, Trenton, Tenn.

METALLIC DENTURES SHOULD NOT BE CAST ON PLASTER IMPRESSIONS.—It is a well-known fact that plaster of Paris is not capable of withstanding the application of extreme heat without marked change in bulk. It ought readily to be understood, therefore, that to undertake to cast base-plates or dentures to a plaster model, which necessarily must be subjected to heat in the process, invites failure of the plates fitting when placed in the mouth. To be brief, then, I would say that to cast a base-plate which will fit the mouth it must be cast to a model which is not perceptibly changed from perfect duplication of the form of the jaw upon which the plate is to rest.—R. C. BROPHY, *Register.*

DAMAGE SUITS.—A woman in Fall River, Mass., recently sued a dentist, alleging criminal assault. The court allowed her damages of one cent, and she now threatens to take the case to a higher court.—A woman in Detroit has brought suit for $5,000 damages against a dentist, alleging malpractice.—A woman in Philadelphia has sued a dentist for $5,000 damages, alleging poor work.—A woman in Seattle, Wash., has brought suit for $1,600 damages against the proprietor of a dental parlor, alleging that blood-poisoning set in after he had attempted to extract a tooth and broken it off below the gums.—F. W. Tarbell, a dentist of Denver, has been sued for $5,000 damages for breach of promise, fraud and misrepresentation, by a woman.

DISINFECTANT ACTION OF ALCOHOL VAPORS.—Satta says that alcohol vapors have a very distinct disinfectant action, which has the advantages of being very prompt, not injuring fabrics, and not producing any poisonous effect in the atmosphere in which this vapor is used. The odor is not markedly irritant, the cost of the apparatus used is low, and the alcohol, which can be used at fifty per cent, is not expensive. Fabrics with delicate tints are slightly altered, however, by this process. This method is useful in rooms of patients with infectious diseases and in the disinfection of railway cars. The materials must be exposed to alcohol vapors for five minutes and then ventilated until the odor of alcohol is removed.—*New York Med. Jour.*

A (COL) LAPSUS LINGUÆ.—At the Pedagogic meeting at Buffalo a distinguished member read a paper on pathology, which another distinguished member proceeded to dissect. In doing this he told of the phenomena of inflammation—how the blood coursed through the arteries, entered the capillaries, accumulated at the seat of the injury; how the corpuscles tumbled over, ran by, piled upon one another; how—and here his tongue ran faster than his think-tree could shed fruit—under this accumulation and pressure "the vessels collapsed." Right here a member in a distant corner gave utterance to a half-suppressed "Ha, ha." Turning on him with mock severity and pointing a finger, he continued, "When, Sir, I said 'the vessels collapse.' I meant 'collapse outwardly.'"—*Dent. Off. & Lab.*

BUTTONHOOK CAUSES SUIT.—A peculiar case was recently brought up in court in Los Angeles for settlement. Two dentists were in partnership, each receiving a percentage on the work done personally. A woman, a friend of one of them, called to have a gold plate made, and the other dentist, the mechanical man, did the work. The denture was a complete success and seemed to fit perfectly. In the middle of the first night the woman woke with

the plate hurting her, and as it did not come out easily she jerked it out with a buttonhook.. Despite all efforts at repair it could not again be made to fit and had to be made over. Here was where the difficulty came in, as the partner who was her friend did not wish to charge her for the second plate, while the mechanical man insisted on his commission for both plates. Inasmuch as the first denture when first made was satisfactory to the patient and to the other partner, the court decided that the mechanical man should receive commission on all the work done.

ILLEGAL PRACTITIONERS.—June 17, a man was arrested at Augusta, Ga., for practising dentistry without a license.—July 22, a man at East Peoria, Ill., was fined $25 and costs for practising dentistry without a license.—The authorities of Louisville, Ky., have sworn out warrants for those dentists who have not paid their licenses.—July 6, a man in Brooklyn was arrested for practising dentistry without being properly licensed.—June 22, two men in Seattle, Wash., were fined $100 and costs each for practising dentistry without a license. Several more are to be tried on the same charge.—June 24, the court discharged a dentist who was charged with employing dentists to work for him without posting their names and licenses in a conspicuous place in his office, as required by law. He plead guilty, but got off on the technicality that he was neither an incorporation nor an association. However, the state board has been after him so vigorously that he has moved to Portland.—June 18, a man was fined $20 and costs in Milwaukee for practising dentistry without a license.

BASE DECEIVER.—A dentist received a call the other morning from a couple whom he soon had reason to believe were lovers. The girl had an aching tooth, relates *London Tidbits*, and as they entered the young man said: "Now, darling, the worst is over. Just take a seat and it will be out in a minute."

"Oh, I daren't," she gasped.

"But it won't hurt you at all, you know."

"But I'm afraid it will."

"It can't. I'd have one pulled in a minute if it ached."

"I don't believe it."

"Well, then, I'll have one pulled out just to show you that it doesn't hurt."

He took a seat, leant back, and opened his mouth, and the dentist seemed to be selecting a tooth to seize with his forceps, when the girl protested.

"Hold on! The test is sufficient. He has proved his devotion. Move away, Harry, and I'll have it pulled."

She took the chair, had the tooth drawn without a groan, and as she went out she was saying to the young man: "Now I can believe you when you declare that you would die for me."

And yet every tooth in his head was false.

TIME FOR THE DIGESTIVE ACT.—At the Society of Biology of Paris, October 31, 1903, Drs. Sicard and Infroit detailed the results of some tests made to show the propelling power of the human intestinal tube. They used an ordinary cylindrical gelatin capsule, 15 mm. long by 6 mm. wide (about nine-sixteenths by four-sixteenths of an inch). The capsule was first filled with

bismuth and afterward immersed for a few seconds in collodion, so as to get a covering on its surface which would make it impervious to the digestive juices. By means of the X-rays it was then possible to localize the different positions occupied by the capsule during its transit through the intestines. After being swallowed in the morning by a fasting individual, the capsule remained in the great curvature of the stomach about half an hour. Eight hours afterward it had reached the cecum. The passage of the capsule through the seven or eight meters of the small intestine in eight hours was too rapid to permit the experimenters to obtain suitable pictures. On the contrary, it remained about four or five hours at the cecum. It passed through the ascending colon in one or two hours, the transverse colon in two of three hours, the descending colon in three or four hours, and at from the twentieth to the twenty-fourth hour came to a stop in the sigmoid flexure of the colon, where it remained ready for expulsion.—*Canadian Jour. of Med. and Surg.*

INTERSTITIAL EMPHYSEMA OF THE CHEEK.—By Dr. Christensen (*Nordisk Tandlakare Tidskrift—Cosmos*). While opening a devitalized lower right second premolar, preparing it for a root-filling, the drill, without meeting with any resistance, passed directly out into the alveolus, and upon withdrawing the instrument a yellow, serous liquid filled the carious cavity present. After washing it out with warm water Dr. Christensen used his hot-air syringe in forcing the water from the field of operation. He had scarcely finished doing so when the patient, a young woman, became very much agitated, saying she felt a peculiar stiffness in the cheek and had become completely deaf in the right ear. With great uneasiness he noticed that the cheek began to swell at an alarming rate, attaining in a few seconds the size of the swelling witnessed in cases of acute alveolar abscess. The patient felt intense upward pressure in the head, and became extremely dizzy. Pressing the cheek with his fingers gave rise to a distinct crepitus sound, from which he reasoned that the whole trouble was caused by air having been forced into the tissues. After half an hour's work he succeeded in forcing the greater part of the air back through the tooth by the use of his two index fingers applied one outside and one inside the cheek. A few air-bubbles having ascended as high as the temple, could not be forced back, but they disappeared after four days by absorption. The swelling in the cheek had completely disappeared after five days. The stiffness of the cheek, the deafness and the sensation of dizziness disappeared as soon as the air had been expelled.

MARRIAGES.—J. E. Ackley, a dentist of Canton, Mo., was married to Miss Annie B. Hampton of Canton, July 14.—Lee A. Bryan, a dentist of Lancaster, O., was married to Miss Daisy Butler of Lancaster, June 22.—J. L. Day, a dentist of Leroy, Minn., was married to Miss Blanche L. Finch of Clinton Falls, Minn., June 22.—Frank Findley, a dentist of Chicago, was married to Miss Clara Norton of Dubuque, Ia., June 9.—P. R. Feigel, a dentist of Louisville, was married to Miss Lilian B. Neuner of Louisville, July 11.—C. B. Frazier, a dentist of Cottonwood, Minn., was married to Miss Cornelia Brownell of St. Louis, June 28.—G. W. Graham, a dentist of Gree-

ley, Col., was married to Miss Jean E. Worts of Philadelphia, June 29.—C. H. Harned, a dentist of Iowa City, Iowa, was married to Miss Pearl Heinsins of Iowa City, June 22.—J. C. McConkey, a dentist of Canton, O., was married to Miss Rebecca E. Douds of Canton, June 22.—C. F. Munroe, a dentist of Buffalo, was married to Miss Mary G. Ross of Auburn, N. Y., June 29.—Will Nichols, a dentist of Medina, O., was married to Miss Eurie Stanberry of Medina, March 26.—Chas. A. Priest, a dentist of Marion, Ind., was married to Miss Cora Ledbetter of Swayzee, Ind., June 23.—Chas. Smith, a dentist of Ukiah, Cal., was married to Miss Myrtle Graham of Cloverdale, June 26.—Chas. E. Slagle, a dentist of Abingdon, Ill., was married to Miss Myrtle Shoop of Abingdon, June 28.—Harry C. Stover, a dentist of Harrisonburg, Pa., was married to Miss Erna E. Koch of Columbia, Pa., June 15.—D. J. Vogelman, a dentist of Vallejo, Cal., was married to Miss Mae Boulon of San Francisco, June 25. J. C. Wood, a dentist of Shirley, Ind., was married to Miss Edna Kirk of Kennard, Ind., July 13.—Frank Warren, a dentist of Painesville, O., was married to Miss Norma Richards of Bellevue, O., June 25.—E. P. Washburn, a dentist of Brooklyn, was married July 5.

Examining Board Affairs.—At the June meeting of the California Board 35 applicants were successful in passing the examination. At the June meeting of the Louisiana Board 14 out of 26 applicants succeeded in passing the examination.—At the June meeting of the Massachusetts Board 55 out of 103 candidates were successful.—At the June meeting of the Minnesota Board 46 applicants passed successfully.—It is stated that the New Hampshire Board has taken steps to recover 32 certificates held by dentists in practice throughout the state, which, it is alleged, were issued illegally or without the required examination.—At the June meeting of the North Carolina Board 27 out of 28 applicants were successful in passing the examination.—At the last meeting of the Ohio Board 11 out of 19 applicants received licenses to practice. The secretary of the Board demanded and received the certificate which was issued in 1898 to T. C. Smith of Ohio City, on evidence that he obtained same by a false affidavit. The circuit court at Dayton recently handed down a decision sustaining the Board in refusing to grant a license to a dentist who had brought suit to compel it to do so.—At the last meeting of the Pennsylvania Board 213 out of 286 applicants were successful in passing the examination.—Two individuals have brought a writ of mandamus against the Rhode Island Board to compel it to issue them licenses to practice. Both failed to pass the examinations some time ago.—At the July meeting of the South Carolina Board 15 candidates received licenses.—At the June meeting of the Virginia Board the following officers were elected: President, H. W. Campbell, Suffolk; Secretary and Treasurer, R. H. Walker, Norfolk.—At the June meeting of the Wisconsin Board 35 applicants were successful in passing the examination.—At the July meeting of the Manitoba Board 6 candidates were granted licenses.—A. J. Gillis and C. H. Wells were recently appointed members of the Yukon Territorial Board.

Robberies.—Otto Ruthenberg, Chicago, July 20, $300.—J. M. Mace, Farmer City, Ill., June 13, $40. The thieves were caught and released after returning the stolen gold.—W. A. Alexander, Carlinville, Ill., July 25, $65. The

doctor caught the thief in his office and turned him over to the police. When searched it was found that he had another lot of gold scrap, and Dr. Alexander suggests that any other dentist in that neighborhood who has been robbed might do well to correspond with him.—June 27, the following dentists in Anderson, Ind., were robbed: W. J. Stapish, $45; C. B. Shellenger, $25; T. J. Costello, $50; J. D. Orland, $35; T. D. Brookins, $30.—June 28, the following dentists in Brazil, Ind., were robbed: E. G. Glasgo, $100; Spears & Thacker, $75; S. H. Lybyer, $50.—June 27, several dentists in Muncie, Ind., had their offices robbed.—June 25, the following dentists in Terre Haute, Ind., were robbed: New York Parlors, $125; Old York State Parlors, $30; C. Williams, $30; Wabash Dental Parlors, $40.—A young man was arrested at Marion, Ind., shortly after all these robberies occurred and was placed under $1,000 bond. He was identified by several of the dentists who were robbed as having called upon them the day before the robbery.—Riley & Snyder, Ft. Scott, Kan., July 6, $60.—July 13, the offices of the following dentists in Leavenworth, Kan., were robbed: T. M. Cockrill, $10; R. E. Nelson, $12; S. J. Renz, $6; W. D. Snyder, nominal loss.—July 5, the following dentists of Bay City, Mich., were robbed: W. Cunningham, $50; F. A. Kraphol, $45; C. W. Porter, $50; J. G. Schindler, $8.—L. J. Tooker, Lansing, Mich., June 22, $50.—C. W. Spring, Pontiac, Mich., July 6, $50.—July 2, the following dentists in Saginaw, Mich., contributed $600 to thieves: R. P. Allen, T. E. Howsen, H. H. Madigan, W. E. Moore, F. C. Mellish, F. W. Shores, G. R. Treanor.—July 4, several dentists at Flint, Mich., were robbed.—Edward Wanous, Minneapolis, July 13, $7.—F. W. Fritsche, New Ulm, Minn., July 7, $50.—L. G. Bell, New Ulm, Minn., June 25, $12.—James & Gallagher, Winona, Minn., July 12, $83. The thief was caught.—A. L. Alexander, Aberdeen, Miss., July 15, $40. The thief was caught.—June 19, the following dental offices in Kansas City, Mo., were robbed: C. H. Gillham, $25; Kaulbach & Kenney, $350; W. B. Kinney, $20, W. L. Campbell, $30.—July 16, the following dentists in Utica, N. Y., were robbed: S. W. Tooke, $50; A. Retter, $90.—Hague & Evans, Delaware, O., July 13, $70.—H. E. McClelland, Middletown, O., July 6, $50.—July 13, the following dentists of Sandusky, O., contributed $100 to thieves: J. K. Douglas, J. T. Nicholson, Chas. E. Stroud.—A. J. Wolfert, Toledo, O., June 19, $20.—Chas. Reel, Harrisonburg, Pa., June 24, $50.—Arthur Thomas, Spartansburg, S. C., was assaulted and robbed of $75 June 26.

Facial Neuralgia Treated by Injections of Alcohol.—Dr. Tourtelot (*Revue de Stomatologie*) describes four cases of facial neuralgia of dental origin successfully treated in from three to four days by means of subgingival injections of alcohol at 60° C., after having tried, without any result whatever, a considerable number of antineuralgic remedies. The *modus operandi* is very simple and consists in injecting 1 cc. of alcohol at 60° C. deeply into the gingival mucous membrane at the point at which the pain seems to originate. The introduction of the warm alcohol into the tissues produces a burning sensation and a pronounced swelling, which disappears concomitantly with the pain in the course of two or three days. If found necessary, the injection may be repeated in the course of a week. The author states that

the results may not be permanent, but recommends this method to relieve temporarily the exceedingly severe pain in cases in which antineuralgics prove valueless.

RIGHT AND LEFT EYES.—Unless you happen to be the one person out of every fifteen who has eyes of equal strength, you are either left-eyed or right-eyed. You also belong to the small minority of one out of every ten persons if your left eye is stronger than your right. As a rule, just as people are right-handed they are right-eyed. This is probably due to the generally greater use of the organs of the right side of the body, as, for example, a gunner using his right arm and shoulder uses his right eye, thereby strengthening it with exercise. Old sea-captains, after long use of the telescope, find their right eye much stronger than the left. This law is confirmed by the experience of aurists. If a person who has ears of equal hearing power has cause to use one ear more than the other for a long period, the ear brought into requisition is found to be much strengthened, and the ear which is not used loses.—*Health.*

TESTING THE CONTOUR OF GOLD FILLINGS BY MEANS OF THE MECHANICAL SEPARATOR.—In the insertion of gold fillings the application of the instrument should be gentle at first, then slightly increased from time to time as the filling progresses, to the full extension of the contact point and final finish of the same. Then the separator may be employed as a test. Removing the force, allowing the teeth to fall together, one may judge in a few moments, by using the floss silk, whether the contour is too full, or just right. If the former, the screw is turned on again and a little more removed with thin, fine, oiled cuttlefish strips. The removed point of contact cannot, as we know, always be determined at once. Days afterward, it may be, the discovery will be made by the patient or the operator that the floss cannot be passed at all. The separator can be placed, without the dam, and the tape again passed. How much better this method than the oft-used scratching saw, or the file, which invariably cuts away too much, leaving the latter condition worse than the first.—GARRETT NEWKIRK, *Summary.*

RHEUMATISM: ITS MICROCOCCUS.—The writers (Walker and Tyffel, *Brit. Med Jour.*) formulate the following provisional statement: The *Micrococcus rheumaticus* produces formic acid in very considerable quantity, and also at least one other of the fatty acid series. The acid (formic) is not only present in the filtered cultures of the organism, but can also be extracted from the bodies of the microorganisms themselves. The washed micrococci contain, in addition to formic acid, at least one of the higher fatty acids. Ordinary streptococci, such as those isolated from a case of erysipelas, give rise to only a small amount of formic acid. This observation may constitute a means of differentiation between the rheumatic microorganism and other members of the streptococci group. Formic acid, and probably another fatty acid, are present in the urine during the course of acute rheumatism in appreciable amounts. From normal urine formic acid is either altogether absent or occurs in traces only. Under the salicylic acid treatment of rheumatism formic acid is reduced in quantity in the urine of the patient. Formic

acid is obtainable from the tissues of an animal (rabbit) suffering from acute arthritis due to the inoculation of the microorganism.

Tooth in the Trachea During Anesthesia.—A case of interest in relation to the treatment of patients in difficulty under anesthesia has been noticed in a contemporary (*Hygeia*); it occurred in Sweden. A patient suddenly ceased to breathe during a supravaginal hysterectomy for fibroid. Artificial respiration and manual pushing forward of the lower jaw proved ineffectual; the anesthetist therefore opened the mouth forcibly with a wooden spatula. Something was heard to snap, but no brooken tooth could be found. The patient began to breathe well, and the operation was concluded. For a few days all went well, then the patient discovered that she had lost a tooth. On mention being made to her of the accident, she declared that she could feel the tooth in her throat. Later on she thought it had stuck in her chest. On the sixteenth day after the operation she left her bed. On the nineteenth the temperature went up to 102.2°, and coughing set in. At length, during a violent paroxysm, the missing tooth was coughed up. The fever and coughing at once ceased.

Anesthesia by Interrupting Conductivity of Nerves.—Solutions of cocain and allied substances can be used by perineural or endoneural injection to interrupt the conductivity of nerves. An excellent local anesthesia is thus brought about. Endoneural injections are generally possible only after the nerve-trunks have been dissected out with infiltration anesthesia; this would prolong the operation quite extensively for amputations, but in inguinal hernias, varicose veins, and operations on the anterior aspect of the neck, the time lost is generally slight. For perineural injections concentrated solutions are necessary unless adrenalin be added (one to two drops of the commercial solution to every cubic centimeter of one per cent cocain solution), or unless the extremities are tied off. In mixed nerves the motor, and often the vasomotor nerves, are paralyzed as well. An accurate knowledge of the nerve-distribution is absolutely necessary. For superficial nerves a one-half of one per cent eucain solution with adrenalin seems to be best. It may take up to thirty minutes before anesthesia appears; it generally lasts two to five hours. Enderlen saw a fatal result after six cubic centimeters (one and one-half drams) of a one per cent cocain solution with six drops of adrenalin. Trying it upon himself, he obtained absolutely no effect. Perthes could perform many operations upon fingers and toes, extraction of teeth, tendoplasty, etc., successfully without after-effects.—Braun, *Medical News.*

Coffee as an Antiseptic.—As long ago as the beginning of the eighteenth century the virtue of coffee in time of plague was noted, and the opinion expressed that if it had been known in England in 1665 it would have been found "of excellent use." A hundred years later attention was drawn to the deodorizing power of roast coffee, and its use was recommended to counteract bad smells of various sorts. In recent years, however, various scientific investigations have been made to define the degree of its bactericidal powers, and to discover which of the constituents of coffee possesses them. Luderitz in 1889 showed that anthrax bacilli were killed by three hours' exposure to a

ten per cent infusion of coffee, and cholera bacilli by four hours' exposure. Quite recently Drs. Crane and Friedlander of Cincinnati have tried the preservative effects of ground coffee on various quickly decomposing substances. When mixed with egg yolk and white in the proportion of one to two absolutely no putrefaction took place, although the substance was freely exposed to laboratory air throughout a hot summer. Chopped beef mixed with coffee also remained many months without the slightest sign of decomposition. It is not easy to decide to what constituent these properties of coffee are due, since green coffee is in no way antiseptic, nor has caffein any antiseptic qualities. The most likely hypothesis is that during the process of roasting coffee tannic acid gives rise to certain bodies resembling the phenols, but this is not yet established.—*Med. Press and Circulator.*

Forces Leading to the Formation of the V-shaped Palatal Arch.—Körner and Waldow claim that adenoids are often responsible for the deformity of the superior maxillary, viz., the V-shaped palatal arch. Gleitsman, however, differs, claiming that there can be no deformity of the hard palate due to adenoids and mouth-breathing. I am sure that breathing through the mouth, due to a stenosis of the nasal passage, can cause an ill-developed superior maxillary bone, especially if the adenoids are present before the child begins to erupt the deciduous teeth. After the teeth are once erupted the development of the adenoids will not, I believe, have as marked a tendency to cause a deformity of the superior maxilla as when the adenoids are present very early in life, because after the teeth are once erupted it is more difficult for a change to take place in the position of the superior or inferior maxillary bones than it is before. It stands to reason that if the person is breathing through the mouth, and the mouth is kept continually open, the weight of the lips and the traction of the muscles of the malar and labial regions of the face will cause the superior maxillary bone to become narrow. A very small amount of pressure on any soft bone will completely change its normal shape. If a child, after six years of age, starts attending school, and sits on a bench so high that the feet cannot touch the floor and the limbs hang over the edge of the seat, the weight of the feet will cause a curvature in the femur. If that six-year-old child's limbs can have a curvature thus induced marked enough to cause a deformity, when he is in the schoolroom only four or five hours a day and is up and running around the rest of the time, why should not the contraction of the orbicularis oris and the weight of the muscles and tissues on the superior maxillary bone cause this bone to change its normal form?—Cassius C. Rogers, *American.*

Pulp Congestion.—By M. C. Marshall, D.D.S., St. Louis. Read before the St. Louis Dental Society. So far as I am aware, the central thought in pulp-capping has been to produce a substance to be placed in apposition to the pulp of such remedial and preservative character that this organ will continue its function in a healthy state, or else to fix a concave disk of metal, the edges of which, resting on the dentin around the point of exposure, will protect it from actual contact with a foreign substance. So far as I know, a cause for hyperemia and death of all exposed pulps has been entirely

overlooked, a condition that is not overcome nor removed by any known method of capping. This is the irregular surface produced in the wall of dentin containing the pulp. This chamber is highly polished—lubricated to a greater or less degree by an exudate, which is indicative of nature's provision for protecting an easily irritated member. Hence, with an interruption of the continuity of this chamber, we find a condition that is directly the reverse of the smoothness originally provided. The edges of the break, even should they be smooth, will act as an irritant under the constant arterial pressure, and stasis in the pulp circulation must ensue. Just how far this might be retarded by a palliative covering I do not know, nor do I claim this broken wall to be the *only* cause for the almost constant death of exposed pulps; but I do claim that it is an ever-present condition, which will in the vast majority of cases *in itself* produce a congestion that necessarily leads to the death of this organ. All our efforts at conservation of exposed pulps should recognize this cause of irritation, for I am convinced that no degree of success will or can attend the operation unless the continuity of this chamber is restored and a perfectly smooth and compatible surface be left against which the pulsating pulp can rest and remain in a physiological state.—*Era.*

UNAPPRECIATED CAUSES OF ANEMIA IN CHILDHOOD.—BY W. E. HOLLOPETER. (*Jour. Med.-Chi. College, Phila.*) He believes that the great primal cause of anemia in children, and the factor least recognized and yet most prevalent, is dental decay. In children of from six to ten years of age it is a very common occurrence to find teeth in an advanced state of decay, with a condition of pus formation and general septic involvement of the whole alimentary canal.

In children with weak digestion and irritable disposition we are constantly correcting their habits, or administeringg moral suasion instead of removing the pus-generating, foul, decaying teeth. It has long been a serious question whether gastro-intestinal catarrh could ever be cured. If a septic oral cavity continues to exist for several years we feel quite sure that the individual can scarcely regain his normal vigor. With carious teeth in early childhood we will have imperfect digestion, and with defective digestion we will soon have gastro-intestinal catarrh and its accompanying anemia.

The author advises that the child be carefully watched during the eruption of the permanent teeth, because this is concomitant with the development of the whole body, especially of the unstable nervous system. Neglect of proper care of the teeth will bring us stomatitis of every degree of intensity—ulceration, sloughing, gangrene, pyorrhea alveolaris. In the jaws, by extension, we will frequently find periostitis, alveolar abscesses and necrosis; owing to this septic condition of the mouth we find in the soft parts in its neighborhood, by continuity of structure, recurrent tonsilitis, pharyngitis, otitis, glandular inflammation, cellulitis, and possibly meningitis by direct extension.

The author states that some years ago the coroner of Philadelphia, a physician, informed him that fully fifty per cent of the cases of death in young children falling under the observation were due to oral sepsis.